# PRIOR ART

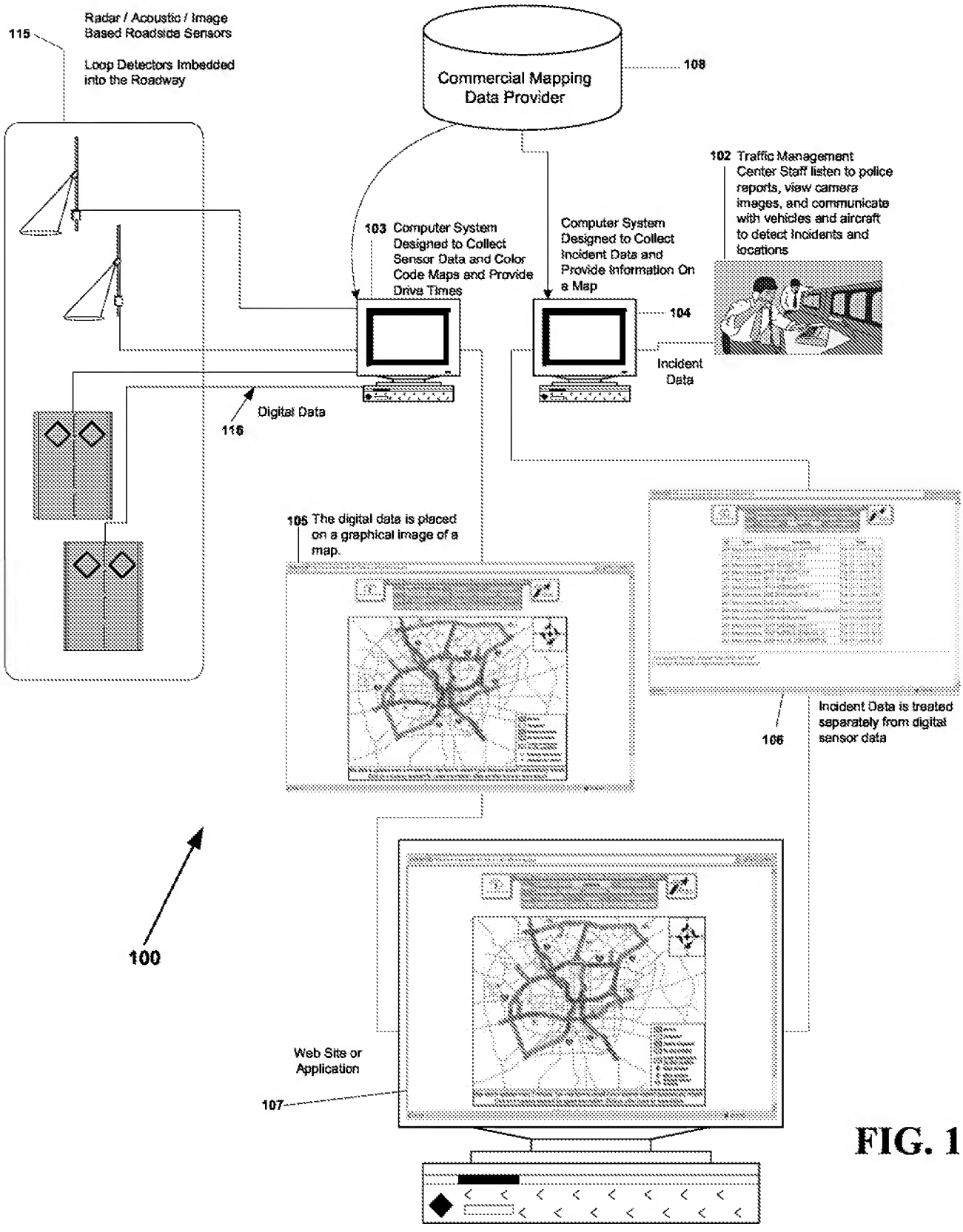



FIG. 1

# PRIOR ART

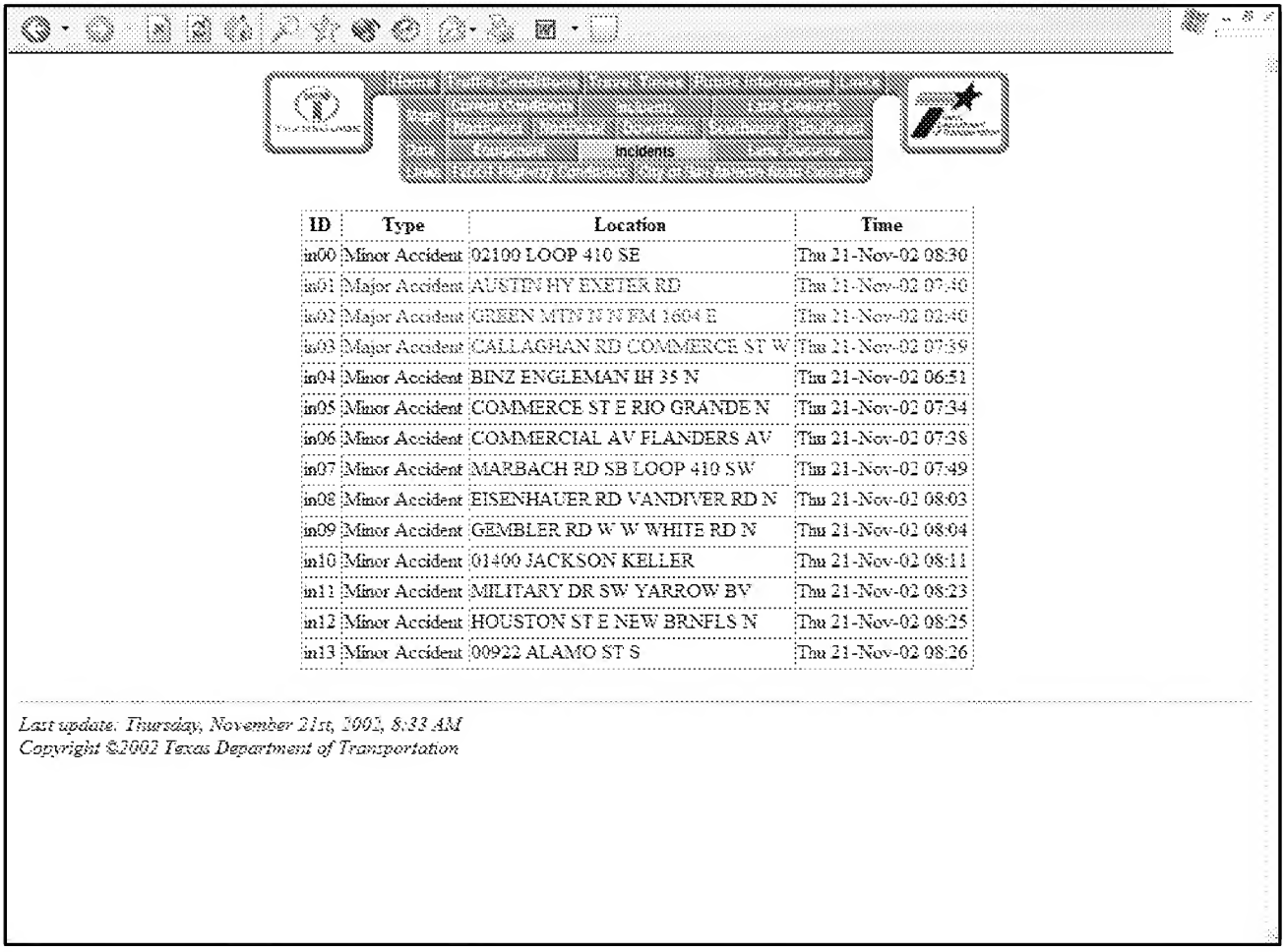
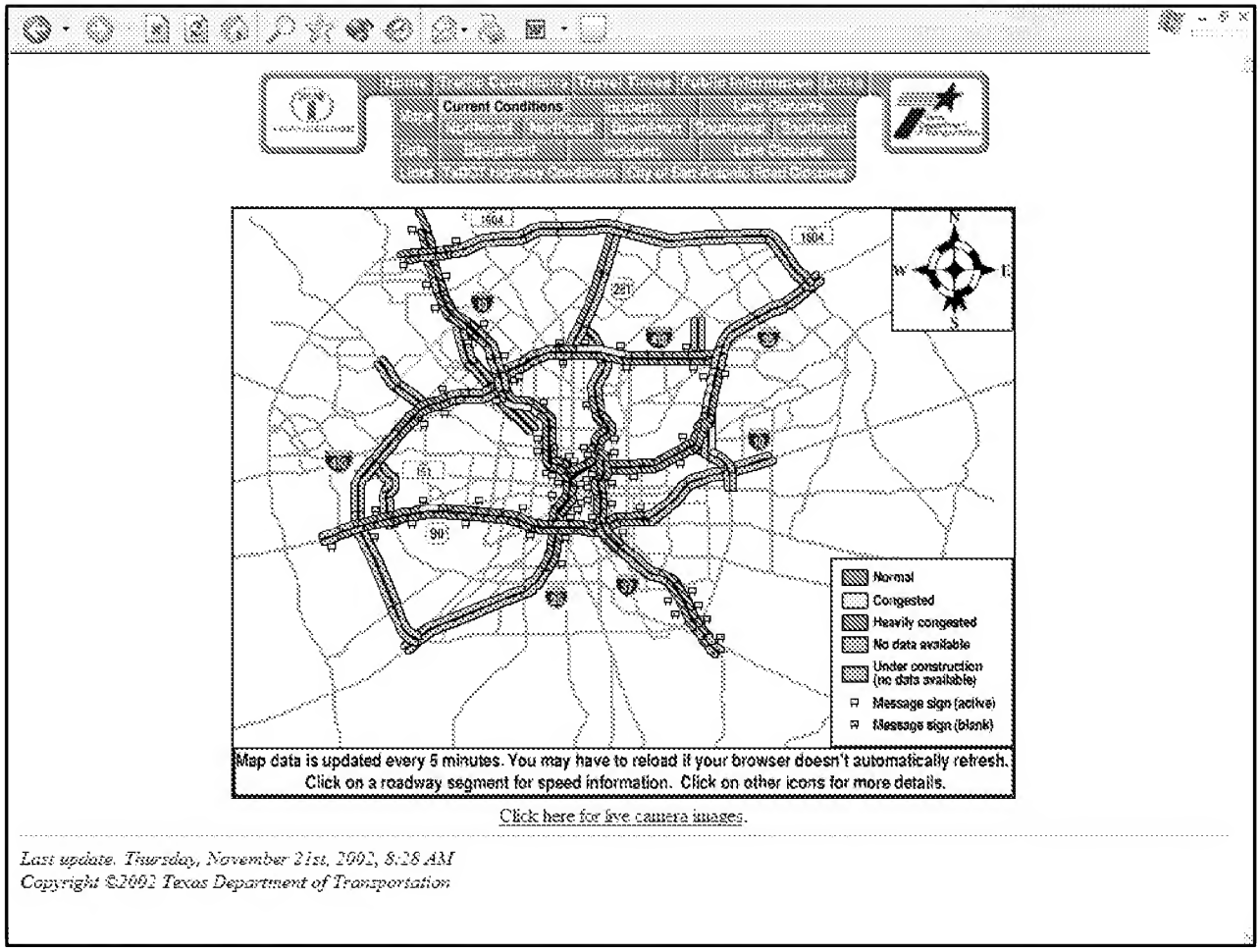



FIG. 2

# PRIOR ART




105

FIG. 3

# PRIOR ART

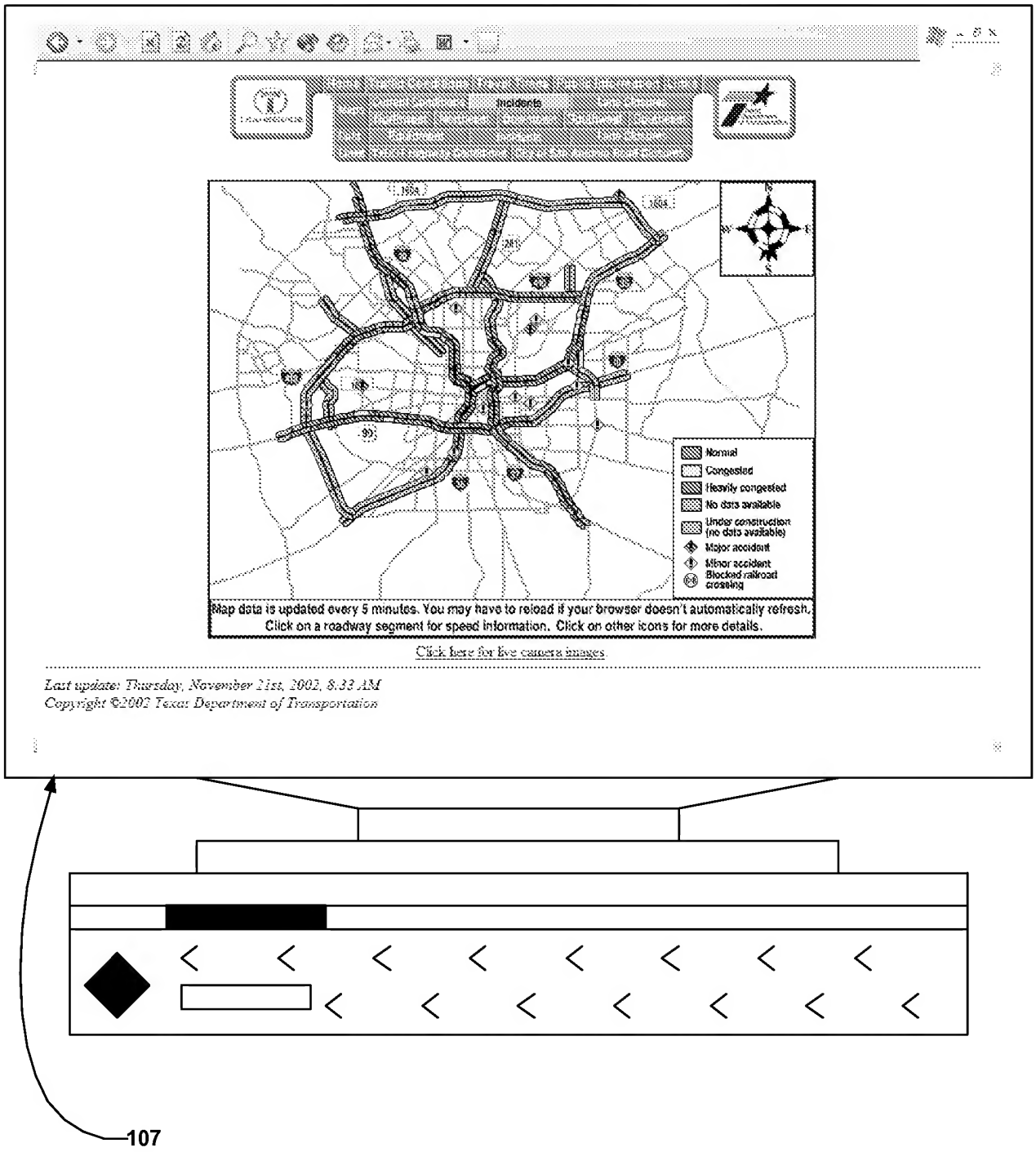



FIG. 4

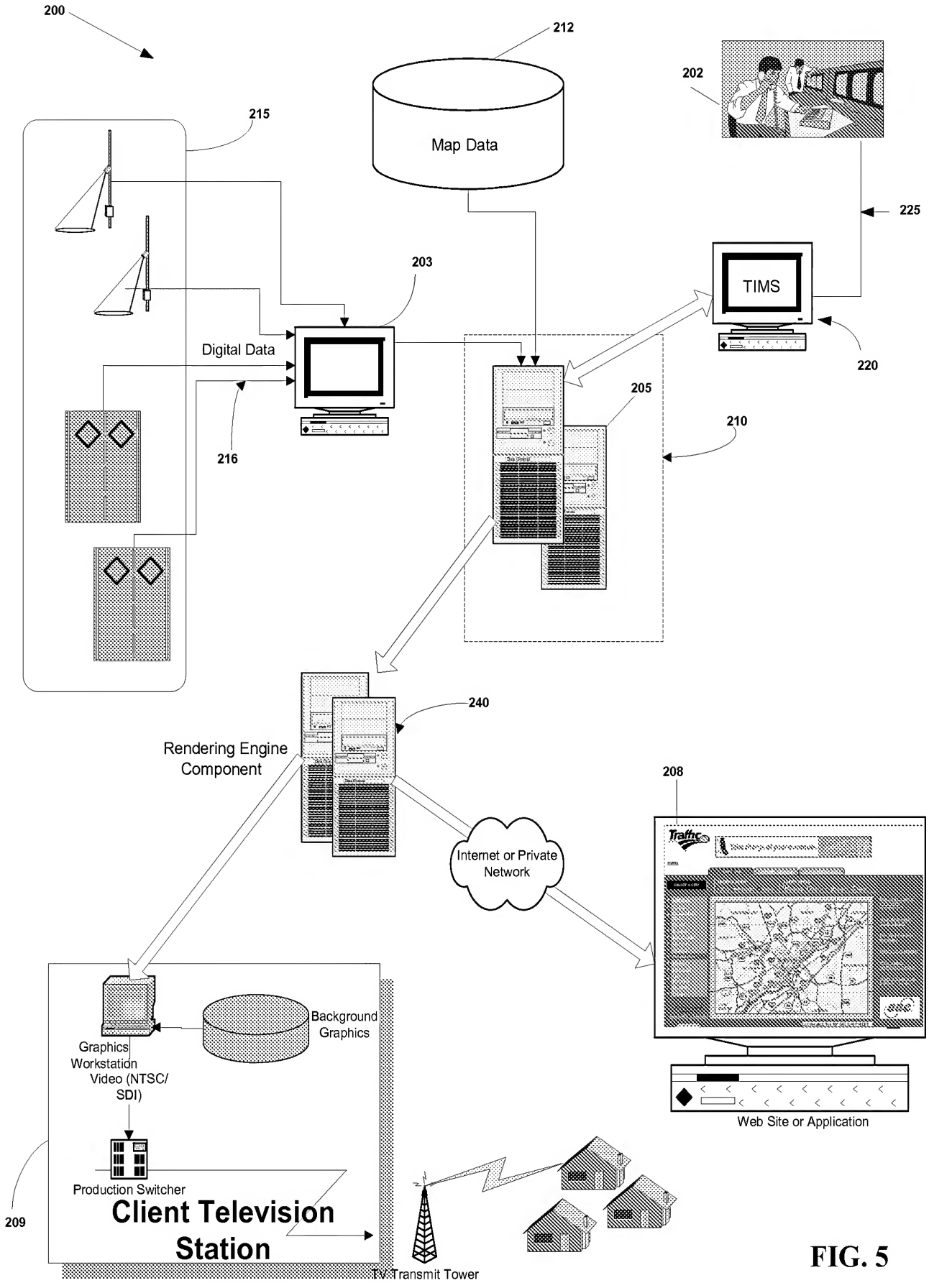

200
212
Map Data
202
215
225
203
TIMS
Digital Data
220
205
210
216
240
Rendering Engine Component
208
Internet or Private Network
Background Graphics
Graphics Workstation Video (NTSC/ SDI)
Production Switcher
Client Television Station
209
TV Transmit Tower
Web Site or Application

FIG. 5

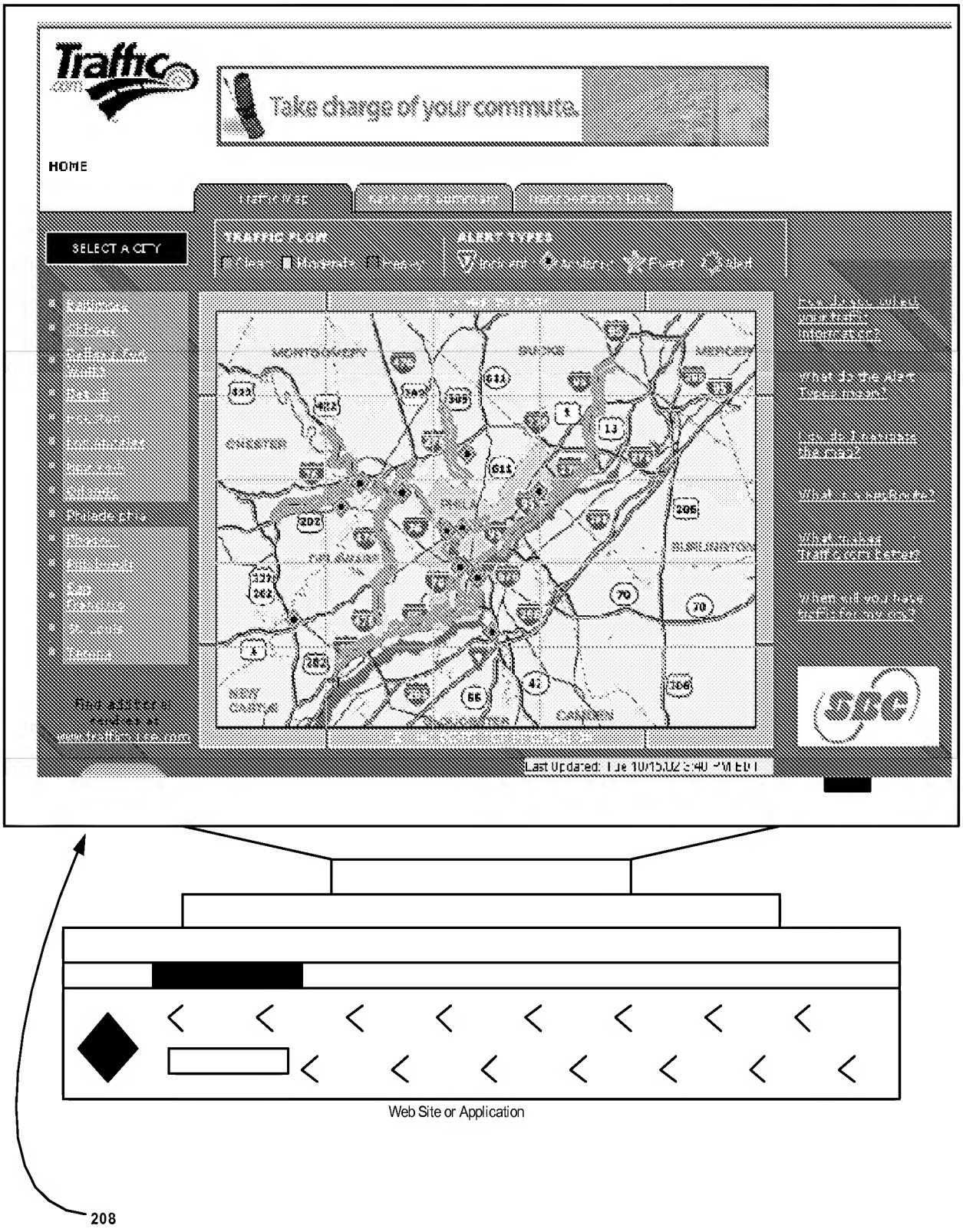

Traffic.com
Take charge of your commute.
HOME
SELECT A CITY
TRAFFIC FLOW
ALERT TYPES
Web Site or Application
208

FIG. 6

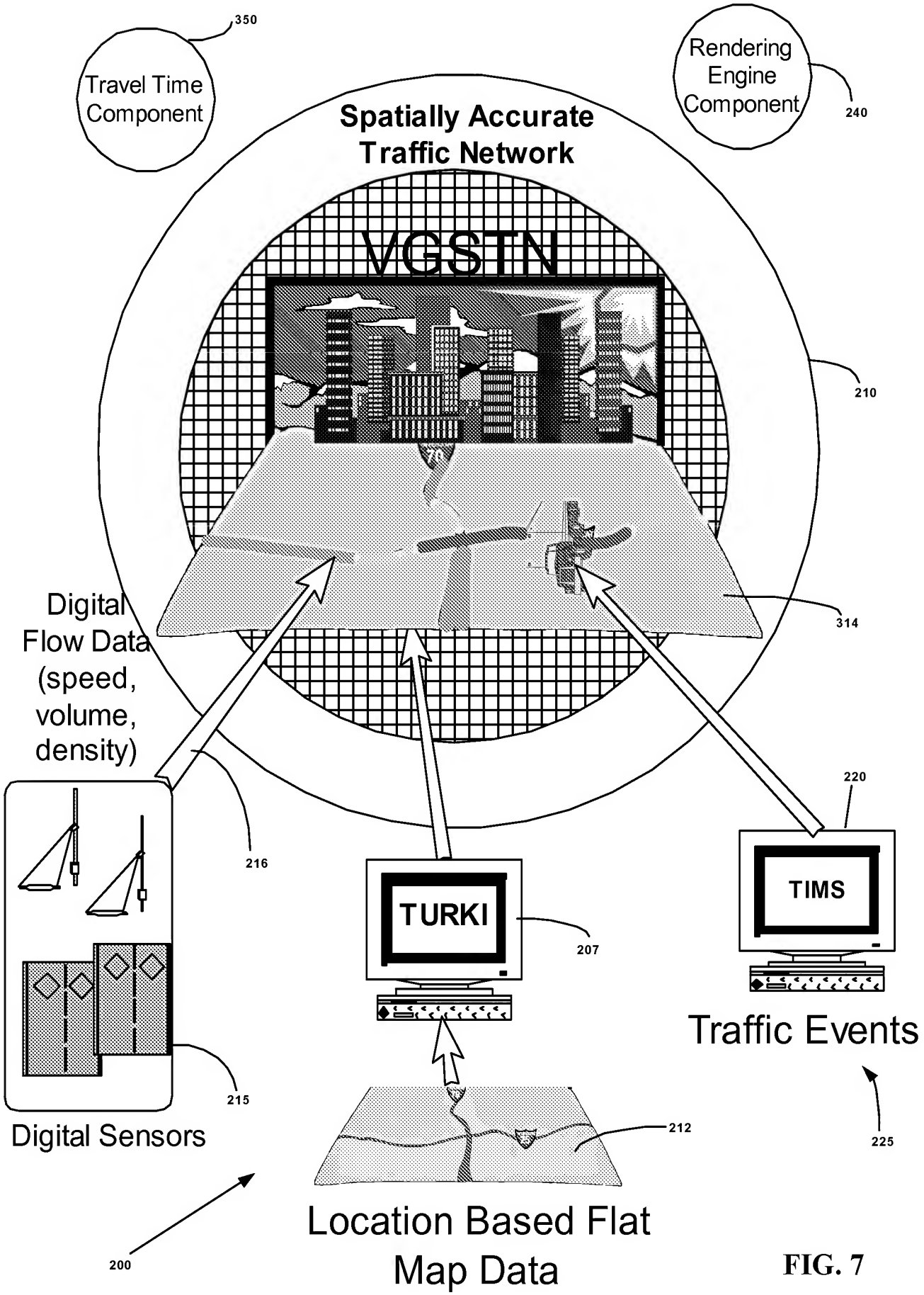

350
Travel Time Component
Rendering Engine Component
240
Spatially Accurate Traffic Network
VGSTN
210
314
Digital Flow Data (speed, volume, density)
216
220
TURKI
207
TIMS
Traffic Events
225
215
Digital Sensors
212
Location Based Flat Map Data
200

FIG. 7

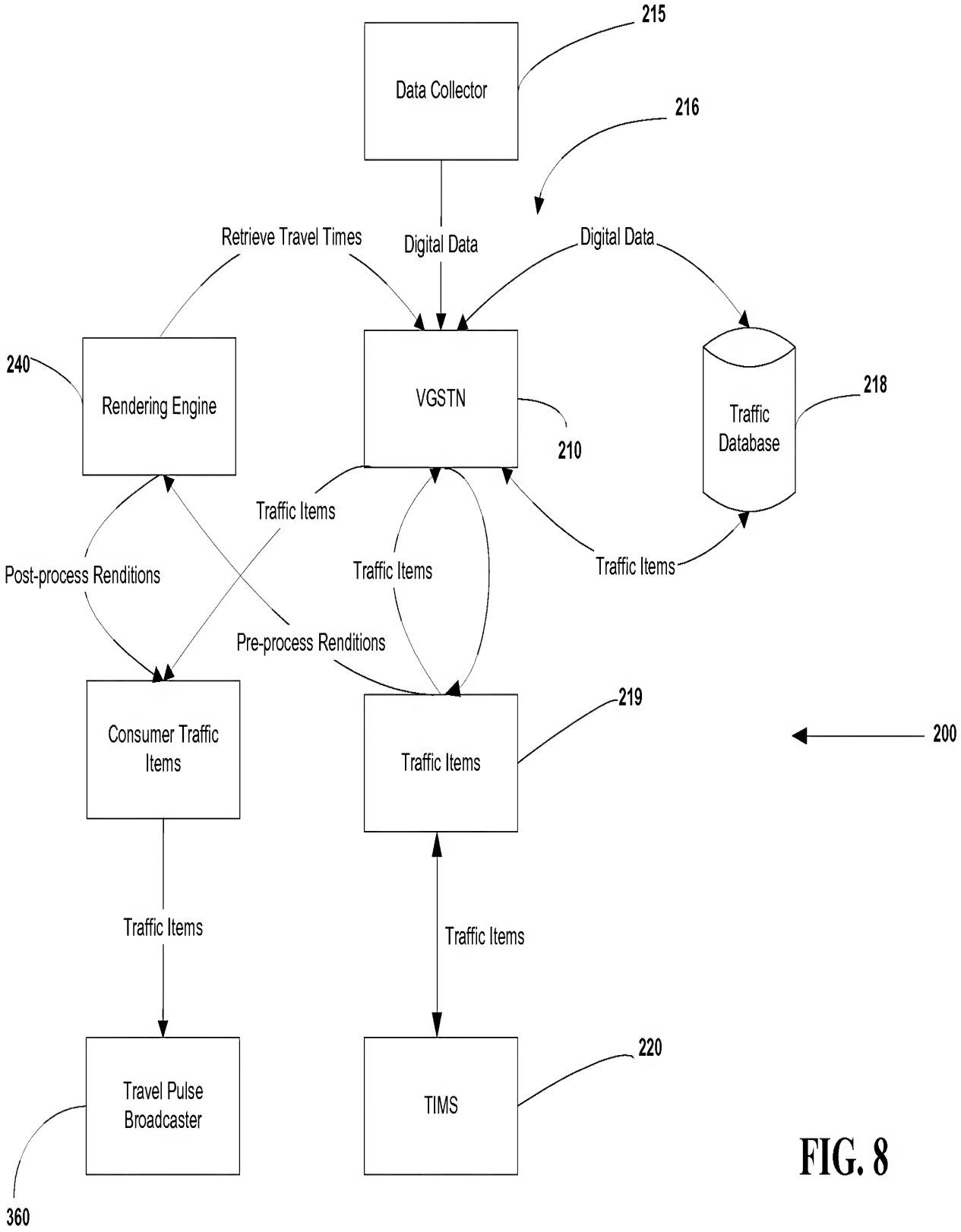

215
Data Collector
216
Retrieve Travel Times
Digital Data
Digital Data
240
Rendering Engine
VGSTN
210
Traffic Database
218
Traffic Items
Traffic Items
Traffic Items
Post-process Renditions
Pre-process Renditions
Consumer Traffic Items
219
Traffic Items
200
Traffic Items
Traffic Items
Travel Pulse Broadcaster
360
TIMS
220

FIG. 8

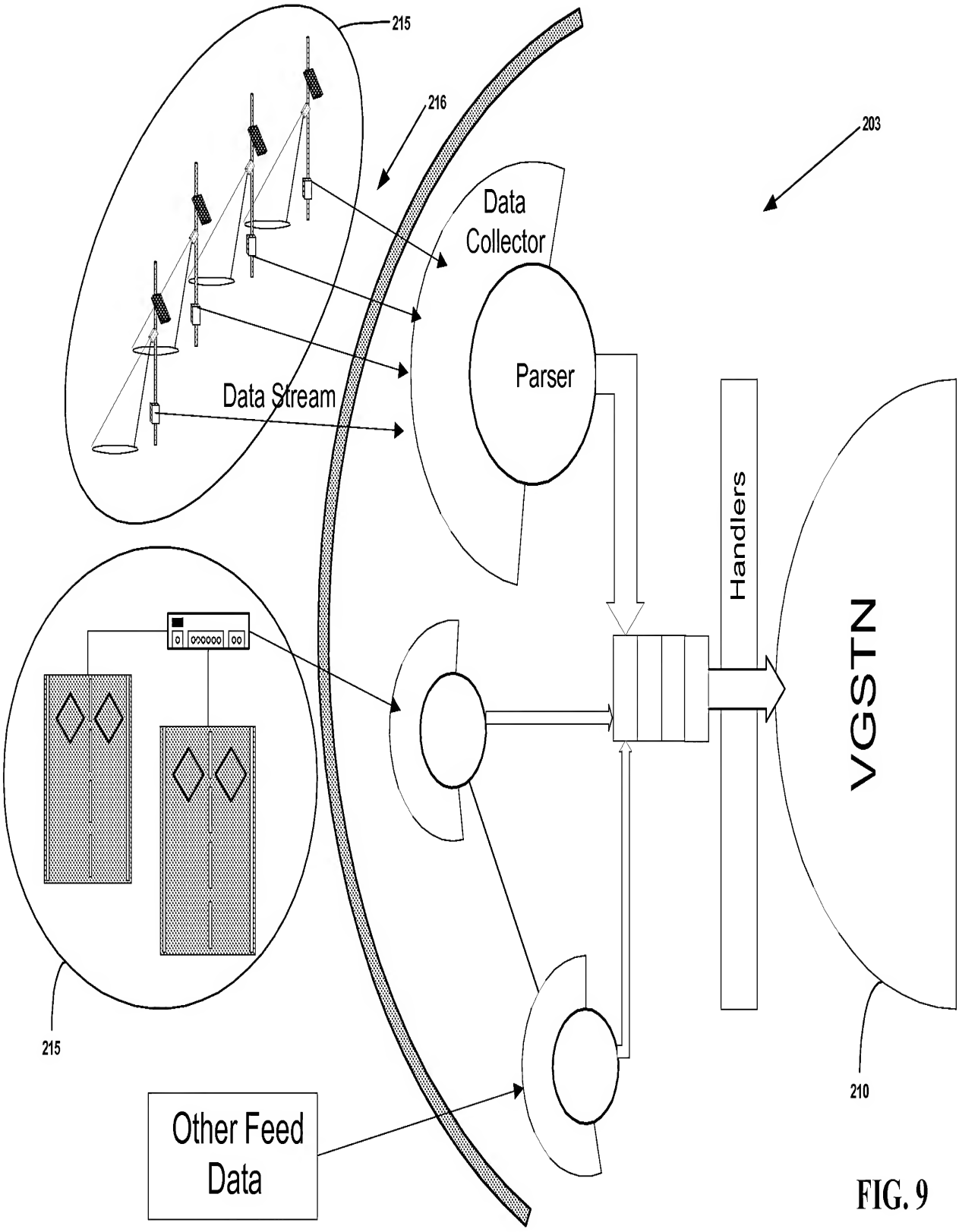

215
216
203
Data Collector
Parser
Data Stream
Handlers
VGSTN
215
210
Other Feed Data

FIG. 9

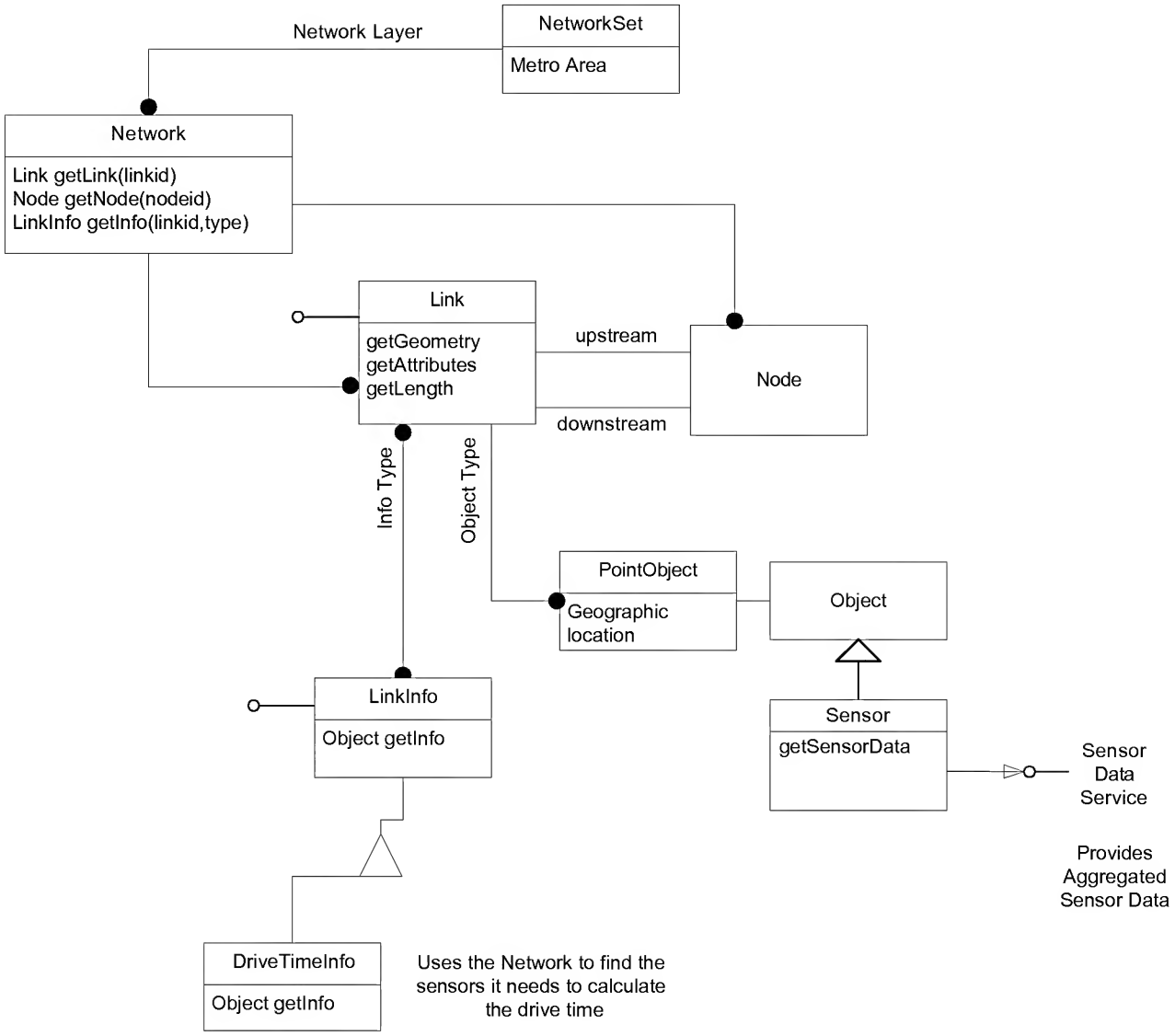

Network Layer
NetworkSet
Metro Area
Network
Link getLink(linkid)
Node getNode(nodeid)
LinkInfo getInfo(linkid,type)
Link
getGeometry
getAttributes
getLength
upstream
downstream
Node
Info Type
Object Type
PointObject
Geographic location
Object
LinkInfo
Object getInfo
Sensor
getSensorData
Sensor Data Service
Provides Aggregated Sensor Data
DriveTimeInfo
Object getInfo
Uses the Network to find the sensors it needs to calculate the drive time

FIG. 10

## Table of Stored Procedures for the TURKI

| TURKI Procedure | Purpose or Function |
|---|---|
| | |
| check_roadway_flags | TURKI can not inactivate a roadway that is on the "roadway short" or "report no problem" lists in the TIMS. This procedure is called to determine if a given roadway is part of those lists. |
| insert_roadway | Creates a new roadway. |
| create_road_from_intersections | Creates a new roadway using an array of intersection points. |
| split_roadway | Splits an existing roadway into 2 roadways. |
| insert_roadway_aliases | Reinserts new aliases to the roadway alias table 275 for any type passed other than unchangeable commercial mapping data. |
| insert_road_direction_aliases | Reinserts new aliases to the roadway direction alias table 274 for any type passed other than unchangeable commercial mapping data. |
| insert_point_aliases | Reinserts new aliases to the point alias table 262 for any type passed other than unchangeable commercial mapping data. |
| insert_new_point | Creates a new point with reference to an existing point. |
| insert_point_from_intersection | Creates new point(s) on a roadway from an intersection. |
| insert_point_from_another_road | Creates a new point from another roadway. |
| update_point | Updates the status description and point type description of an existing non-commercial mapping data type point. |
| change_roadway_status | Updates the status description of an existing roadway. |
| change_point_on_road_status | Updates the status description of an existing point on a roadway. |
| delete_point | Deletes a point identification from a given roadway, as long as it is not an original NavTech point, and has not yet been referenced by any application. |
| insert_point_visibility_codes | Returns a list of visibility type codes for a point and roadway. |
| calculate_geoloc | Returns a list of direction values. |
| update_start_end_point_on_road | Updates the start and the end point for a given roadway_id. |
| assign_points_sequence | Assigns a point to a roadway. |
| insert_new_point_calc_geoloc | Creates a new point in reference to an existing point. This procedure calculates a GeoLoc based on the i_distance_percentage value. |

**FIG. 11**

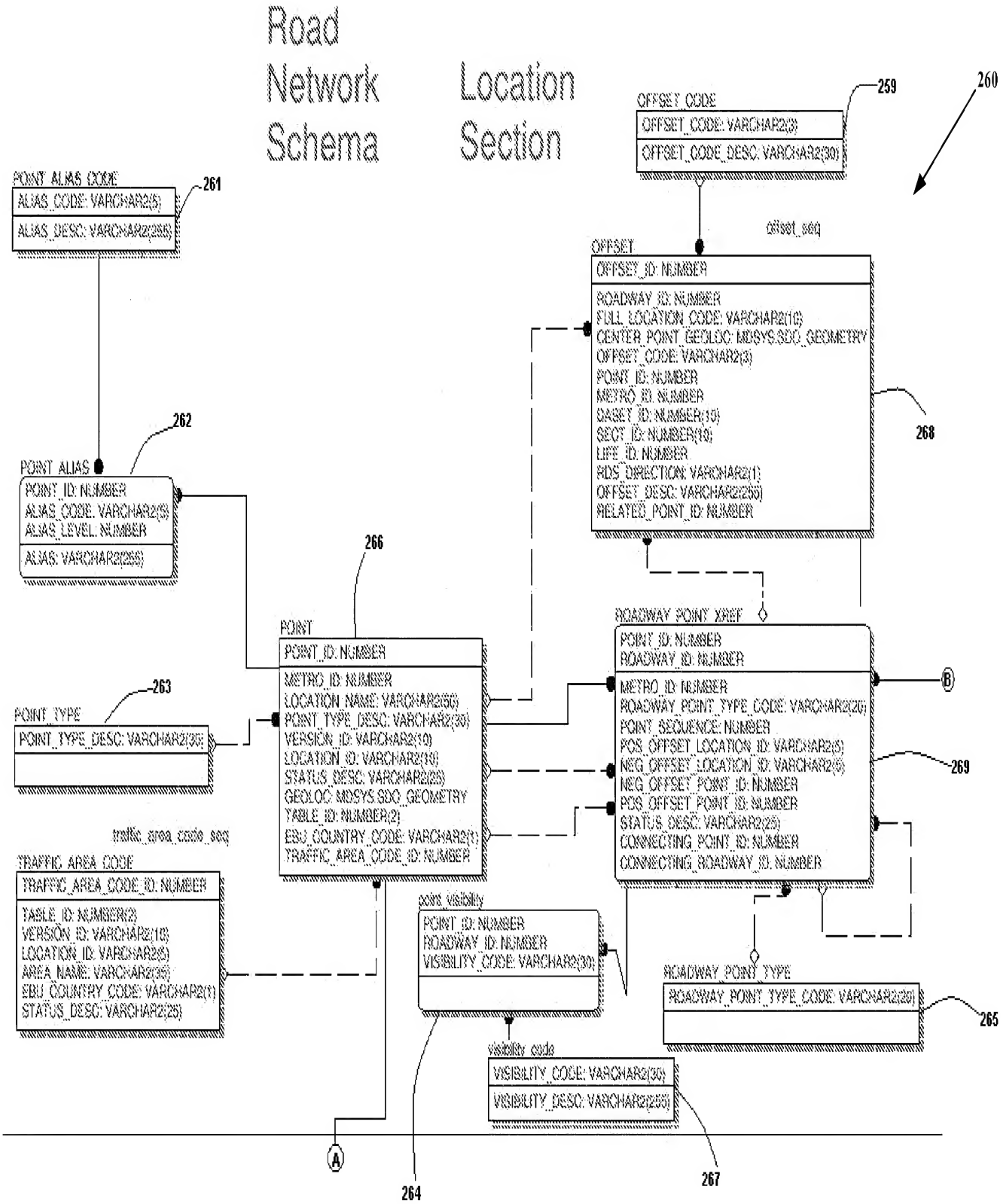

Road Network Schema
Location Section
260
OFFSET_CODE
OFFSET_CODE: VARCHAR2(3)
OFFSET_CODE_DESC: VARCHAR2(30)
259
offset_seq
OFFSET
OFFSET_ID: NUMBER
ROADWAY_ID: NUMBER
FULL_LOCATION_CODE: VARCHAR2(16)
CENTER_POINT_GEOLOC: MDSYS.SDO_GEOMETRY
OFFSET_CODE: VARCHAR2(3)
POINT_ID: NUMBER
METRO_ID: NUMBER
QASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER
RDS_DIRECTION: VARCHAR2(1)
OFFSET_DESC: VARCHAR2(255)
RELATED_POINT_ID: NUMBER
268
POINT_ALIAS_CODE
ALIAS_CODE: VARCHAR2(5)
ALIAS_DESC: VARCHAR2(255)
261
POINT_ALIAS
POINT_ID: NUMBER
ALIAS_CODE: VARCHAR2(5)
ALIAS_LEVEL: NUMBER
ALIAS: VARCHAR2(255)
262
266
POINT
POINT_ID: NUMBER
METRO_ID: NUMBER
LOCATION_NAME: VARCHAR2(60)
POINT_TYPE_DESC: VARCHAR2(30)
VERSION_ID: VARCHAR2(10)
LOCATION_ID: VARCHAR2(10)
STATUS_DESC: VARCHAR2(25)
GEOLOC: MDSYS.SDO_GEOMETRY
TABLE_ID: NUMBER(2)
EBU_COUNTRY_CODE: VARCHAR2(1)
TRAFFIC_AREA_CODE_ID: NUMBER
ROADWAY_POINT_XREF
POINT_ID: NUMBER
ROADWAY_ID: NUMBER
METRO_ID: NUMBER
ROADWAY_POINT_TYPE_CODE: VARCHAR2(20)
POINT_SEQUENCE: NUMBER
POS_OFFSET_LOCATION_ID: VARCHAR2(5)
NEG_OFFSET_LOCATION_ID: VARCHAR2(5)
NEG_OFFSET_POINT_ID: NUMBER
POS_OFFSET_POINT_ID: NUMBER
STATUS_DESC: VARCHAR2(25)
CONNECTING_POINT_ID: NUMBER
CONNECTING_ROADWAY_ID: NUMBER
269
B
POINT_TYPE
POINT_TYPE_DESC: VARCHAR2(30)
263
traffic_area_code_seq
TRAFFIC_AREA_CODE
TRAFFIC_AREA_CODE_ID: NUMBER
TABLE_ID: NUMBER(2)
VERSION_ID: VARCHAR2(10)
LOCATION_ID: VARCHAR2(5)
AREA_NAME: VARCHAR2(35)
EBU_COUNTRY_CODE: VARCHAR2(1)
STATUS_DESC: VARCHAR2(25)
point_visibility
POINT_ID: NUMBER
ROADWAY_ID: NUMBER
VISIBILITY_CODE: VARCHAR2(30)
ROADWAY_POINT_TYPE
ROADWAY_POINT_TYPE_CODE: VARCHAR2(20)
265
visibility_code
VISIBILITY_CODE: VARCHAR2(30)
VISIBILITY_DESC: VARCHAR2(255)
267
264
A

FIG. 12

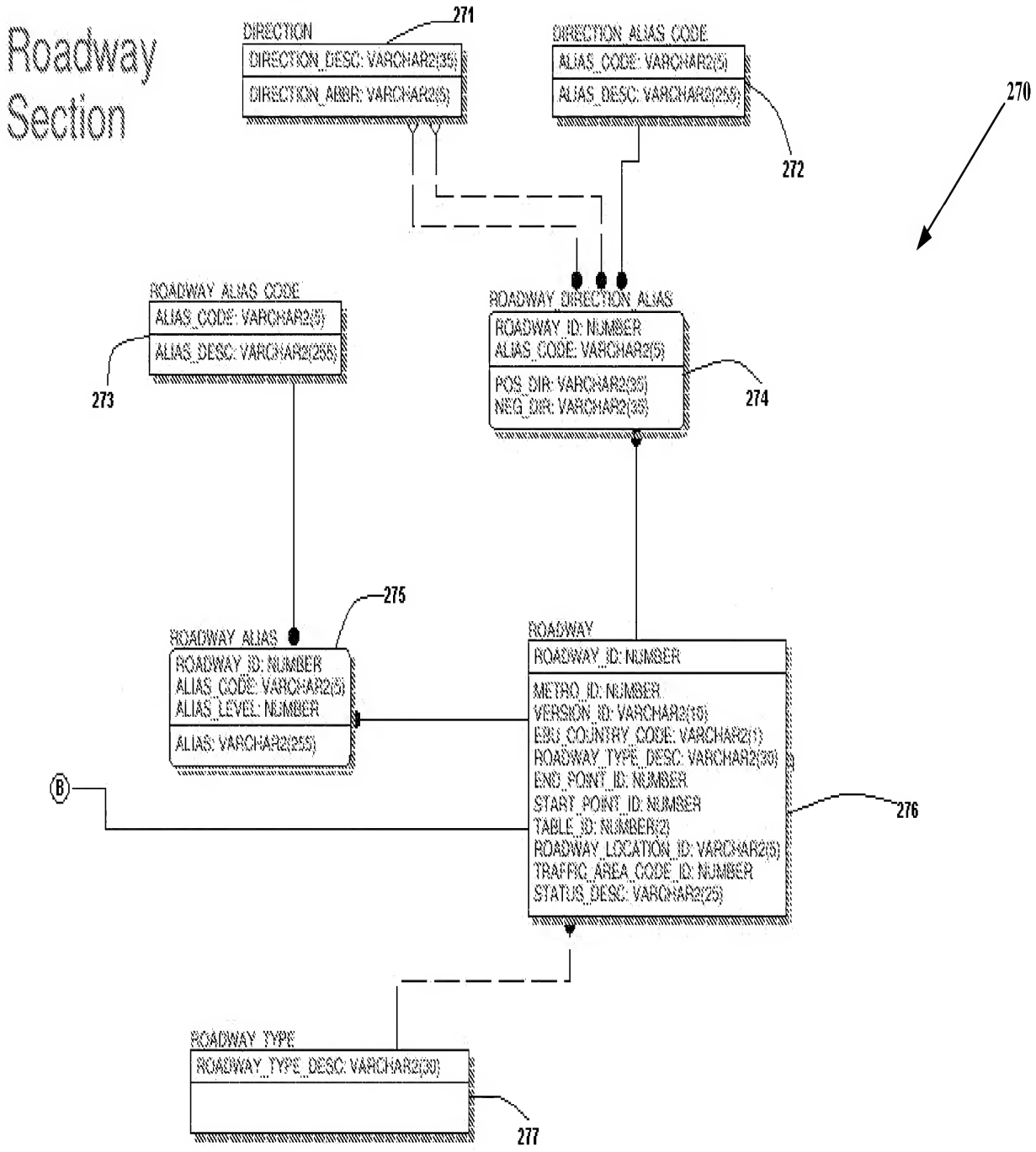

Roadway Section
DIRECTION
DIRECTION_DESC: VARCHAR2(35)
DIRECTION_ABBR: VARCHAR2(5)
271
DIRECTION_ALIAS_CODE
ALIAS_CODE: VARCHAR2(5)
ALIAS_DESC: VARCHAR2(255)
272
270
ROADWAY_ALIAS_CODE
ALIAS_CODE: VARCHAR2(5)
ALIAS_DESC: VARCHAR2(255)
273
ROADWAY_DIRECTION_ALIAS
ROADWAY_ID: NUMBER
ALIAS_CODE: VARCHAR2(5)
POS_DIR: VARCHAR2(35)
NEG_DIR: VARCHAR2(35)
274
ROADWAY_ALIAS
ROADWAY_ID: NUMBER
ALIAS_CODE: VARCHAR2(5)
ALIAS_LEVEL: NUMBER
ALIAS: VARCHAR2(255)
275
ROADWAY
ROADWAY_ID: NUMBER
METRO_ID: NUMBER
VERSION_ID: VARCHAR2(15)
ESU_COUNTRY_CODE: VARCHAR2(1)
ROADWAY_TYPE_DESC: VARCHAR2(30)
END_POINT_ID: NUMBER
START_POINT_ID: NUMBER
TABLE_ID: NUMBER(2)
ROADWAY_LOCATION_ID: VARCHAR2(5)
TRAFFIC_AREA_CODE_ID: NUMBER
STATUS_DESC: VARCHAR2(25)
276
B
ROADWAY_TYPE
ROADWAY_TYPE_DESC: VARCHAR2(30)
277

FIG. 13

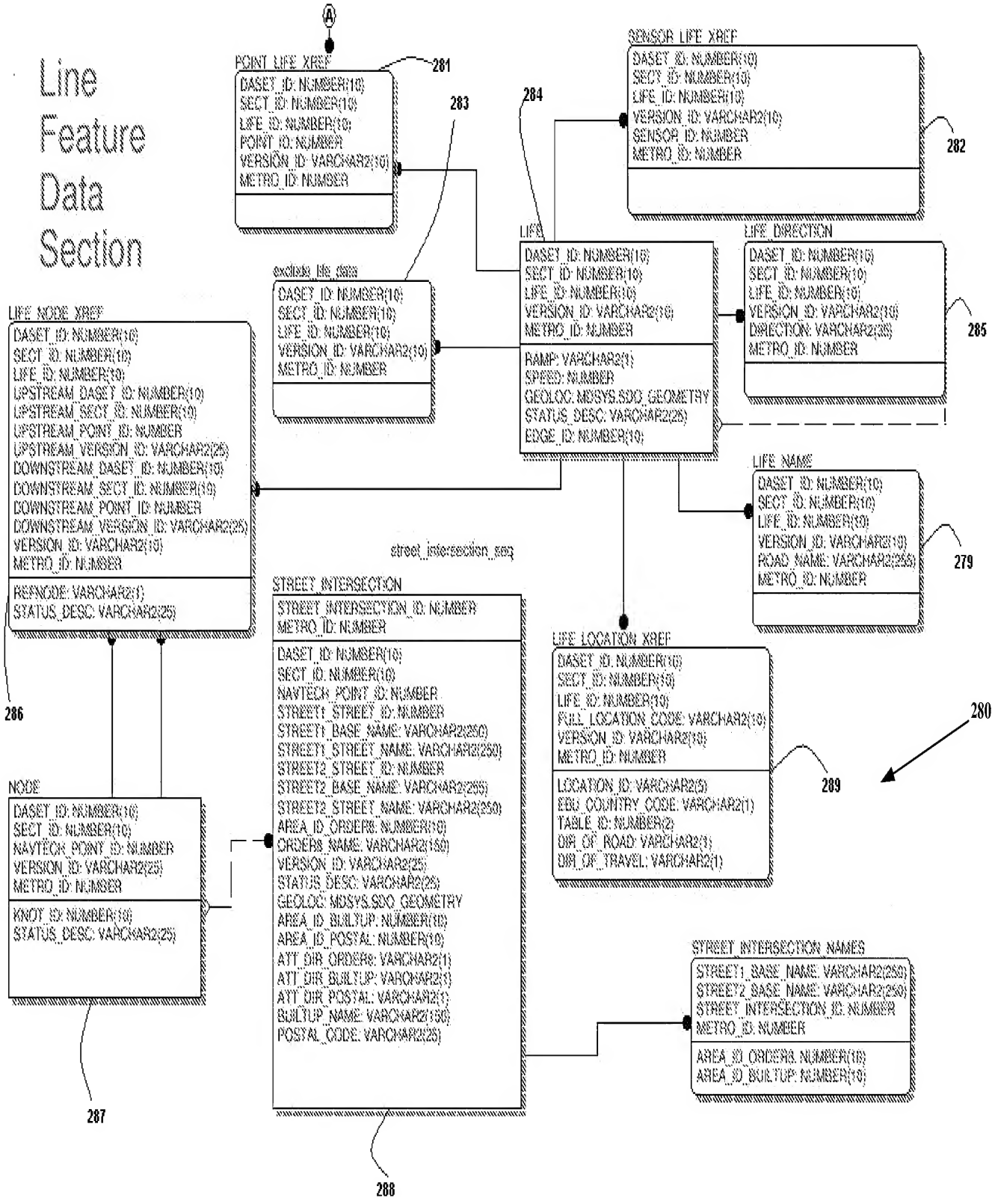

Line Feature Data Section
A
POINT_LIFE_XREF
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
POINT_ID: NUMBER
VERSION_ID: VARCHAR2(10)
METRO_ID: NUMBER
281
283
284
SENSOR_LIFE_XREF
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
VERSION_ID: VARCHAR2(10)
SENSOR_ID: NUMBER
METRO_ID: NUMBER
282
LIFE
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
VERSION_ID: VARCHAR2(10)
METRO_ID: NUMBER
RAMP: VARCHAR2(1)
SPEED: NUMBER
GEOLOC: MDSYS.SDO_GEOMETRY
STATUS_DESC: VARCHAR2(25)
EDGE_ID: NUMBER(10)
LIFE_DIRECTION
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
VERSION_ID: VARCHAR2(10)
DIRECTION: VARCHAR2(30)
METRO_ID: NUMBER
285
exclude_life_data
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
VERSION_ID: VARCHAR2(10)
METRO_ID: NUMBER
LIFE_NODE_XREF
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
UPSTREAM_DASET_ID: NUMBER(10)
UPSTREAM_SECT_ID: NUMBER(10)
UPSTREAM_POINT_ID: NUMBER
UPSTREAM_VERSION_ID: VARCHAR2(25)
DOWNSTREAM_DASET_ID: NUMBER(10)
DOWNSTREAM_SECT_ID: NUMBER(10)
DOWNSTREAM_POINT_ID: NUMBER
DOWNSTREAM_VERSION_ID: VARCHAR2(25)
VERSION_ID: VARCHAR2(10)
METRO_ID: NUMBER
REFNODE: VARCHAR2(1)
STATUS_DESC: VARCHAR2(25)
286
LIFE_NAME
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
VERSION_ID: VARCHAR2(10)
ROAD_NAME: VARCHAR2(255)
METRO_ID: NUMBER
279
street_intersection_seq
STREET_INTERSECTION
STREET_INTERSECTION_ID: NUMBER
METRO_ID: NUMBER
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
NAVTECH_POINT_ID: NUMBER
STREET1_STREET_ID: NUMBER
STREET1_BASE_NAME: VARCHAR2(250)
STREET1_STREET_NAME: VARCHAR2(250)
STREET2_STREET_ID: NUMBER
STREET2_BASE_NAME: VARCHAR2(255)
STREET2_STREET_NAME: VARCHAR2(250)
AREA_ID_ORDER8: NUMBER(10)
ORDER8_NAME: VARCHAR2(150)
VERSION_ID: VARCHAR2(25)
STATUS_DESC: VARCHAR2(25)
GEOLOC: MDSYS.SDO_GEOMETRY
AREA_ID_BUILTUP: NUMBER(10)
AREA_ID_POSTAL: NUMBER(10)
ATT_DIR_ORDER8: VARCHAR2(1)
ATT_DIR_BUILTUP: VARCHAR2(1)
ATT_DIR_POSTAL: VARCHAR2(1)
BUILTUP_NAME: VARCHAR2(150)
POSTAL_CODE: VARCHAR2(25)
LIFE_LOCATION_XREF
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
LIFE_ID: NUMBER(10)
FULL_LOCATION_CODE: VARCHAR2(10)
VERSION_ID: VARCHAR2(10)
METRO_ID: NUMBER
LOCATION_ID: VARCHAR2(5)
EBU_COUNTRY_CODE: VARCHAR2(1)
TABLE_ID: NUMBER(2)
DIR_OF_ROAD: VARCHAR2(1)
DIR_OF_TRAVEL: VARCHAR2(1)
280
289
NODE
DASET_ID: NUMBER(10)
SECT_ID: NUMBER(10)
NAVTECH_POINT_ID: NUMBER
VERSION_ID: VARCHAR2(25)
METRO_ID: NUMBER
KNOT_ID: NUMBER(10)
STATUS_DESC: VARCHAR2(25)
287
STREET_INTERSECTION_NAMES
STREET1_BASE_NAME: VARCHAR2(250)
STREET2_BASE_NAME: VARCHAR2(250)
STREET_INTERSECTION_ID: NUMBER
METRO_ID: NUMBER
AREA_ID_ORDER8: NUMBER(10)
AREA_ID_BUILTUP: NUMBER(10)
288

FIG. 14

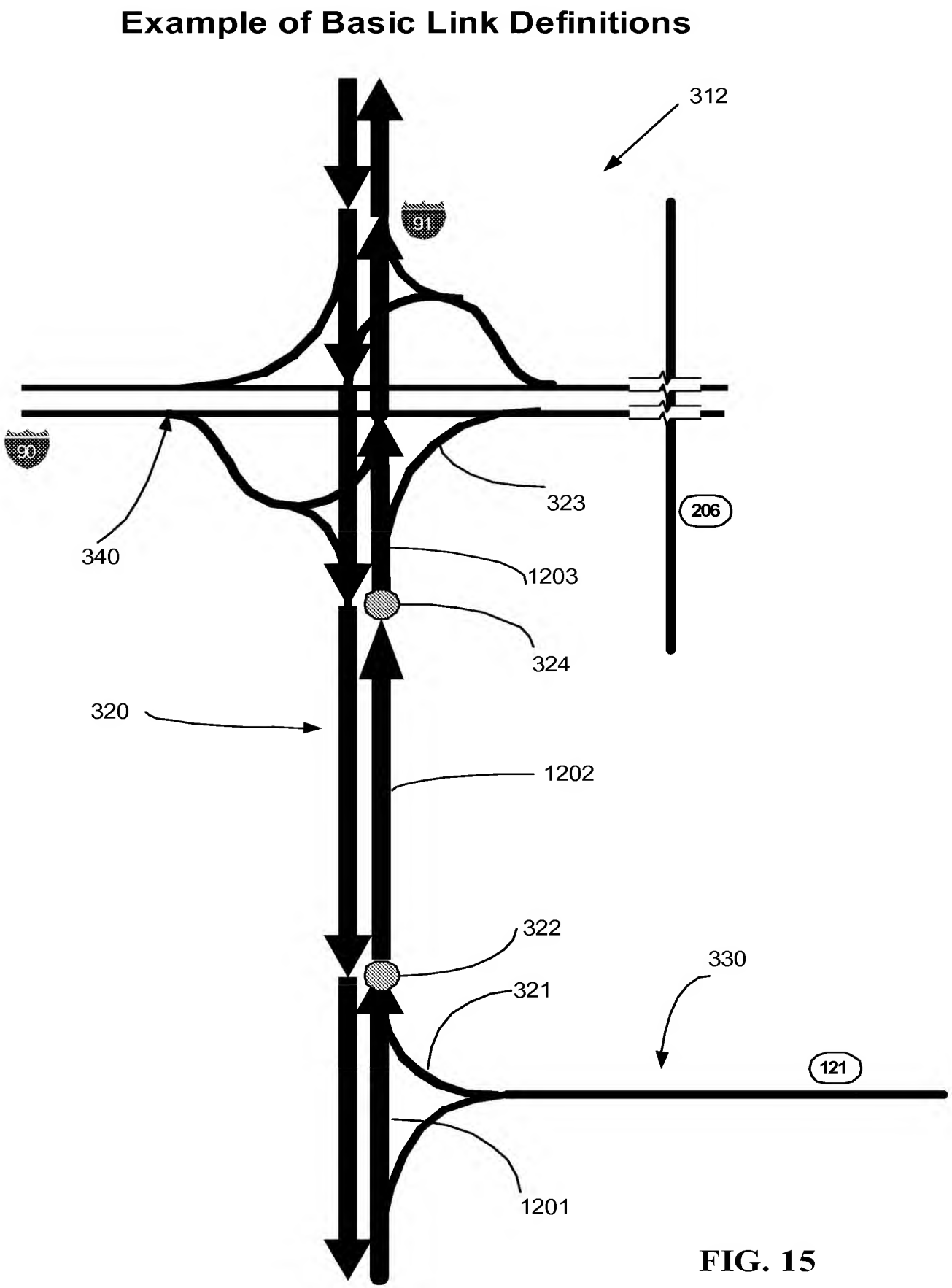

Example of Basic Link Definitions
312
91
90
323
206
340
1203
324
320
1202
322
330
321
121
1201

FIG. 15

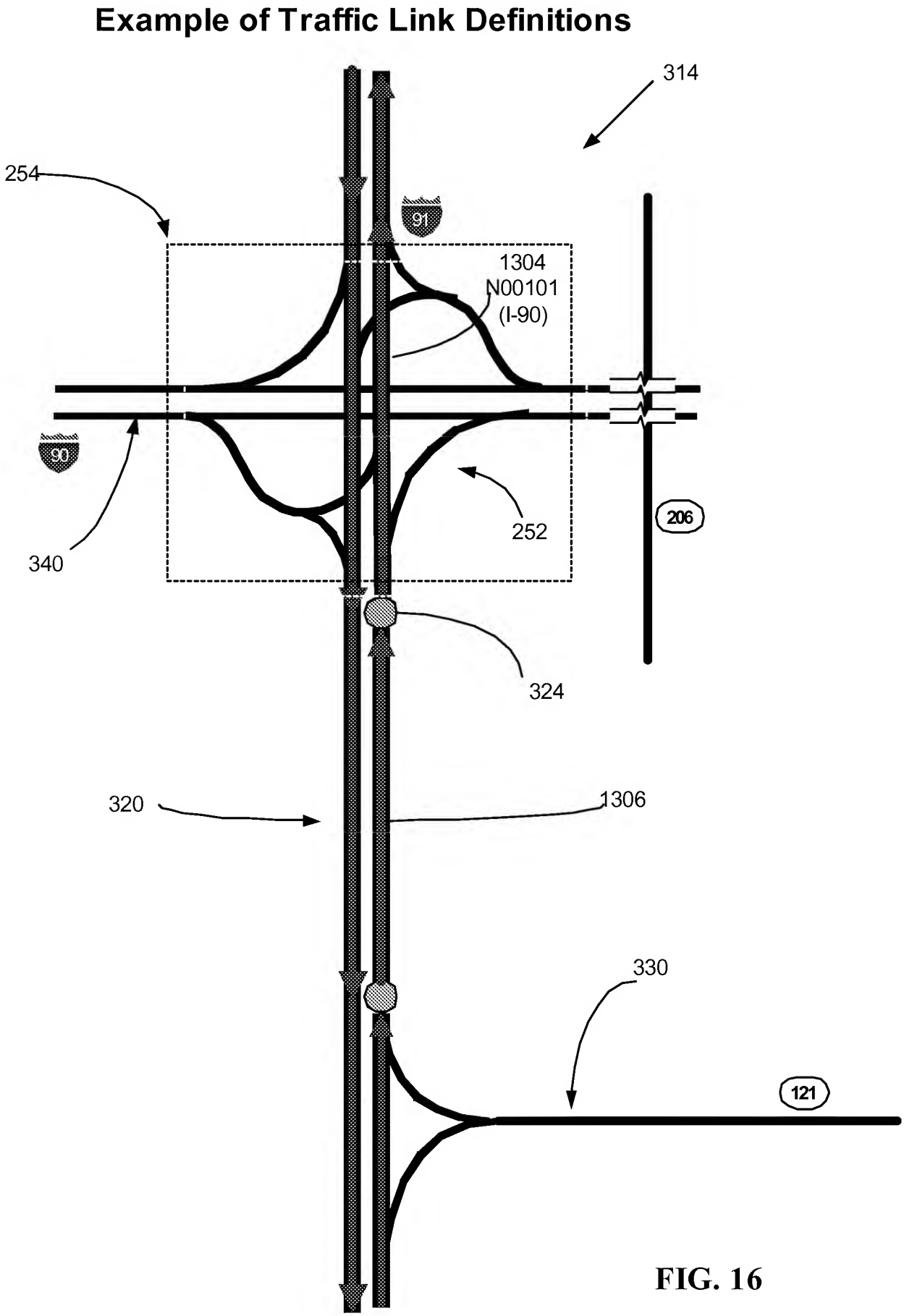

Example of Traffic Link Definitions
314
254
91
1304
N00101
(I-90)
90
206
252
340
324
320
1306
330
121

FIG. 16

# Example of Proximities for Traffic Link Definitions

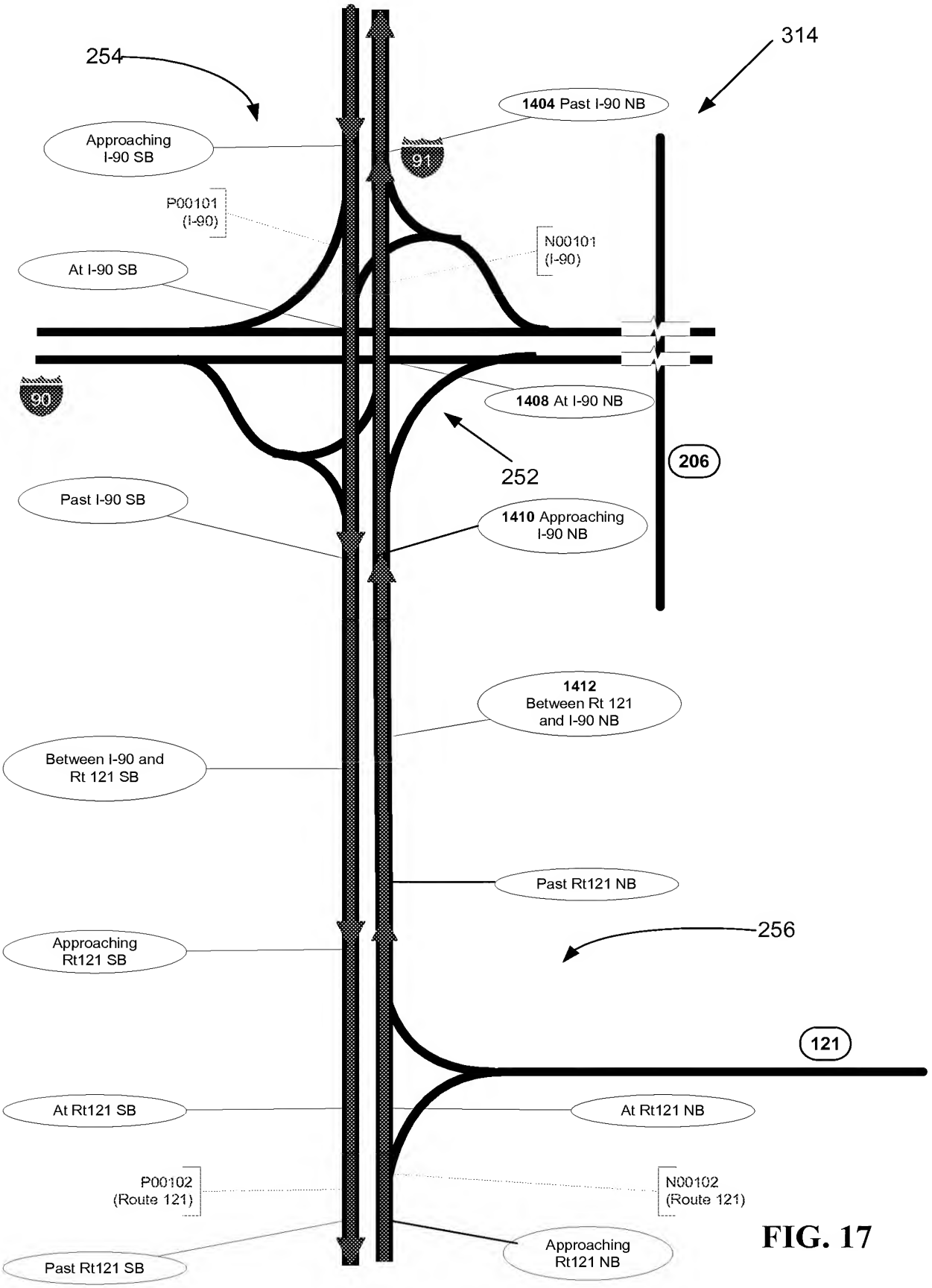



FIG. 17

**Example of Graphical Network Layer Mapping from the Traffic Network**

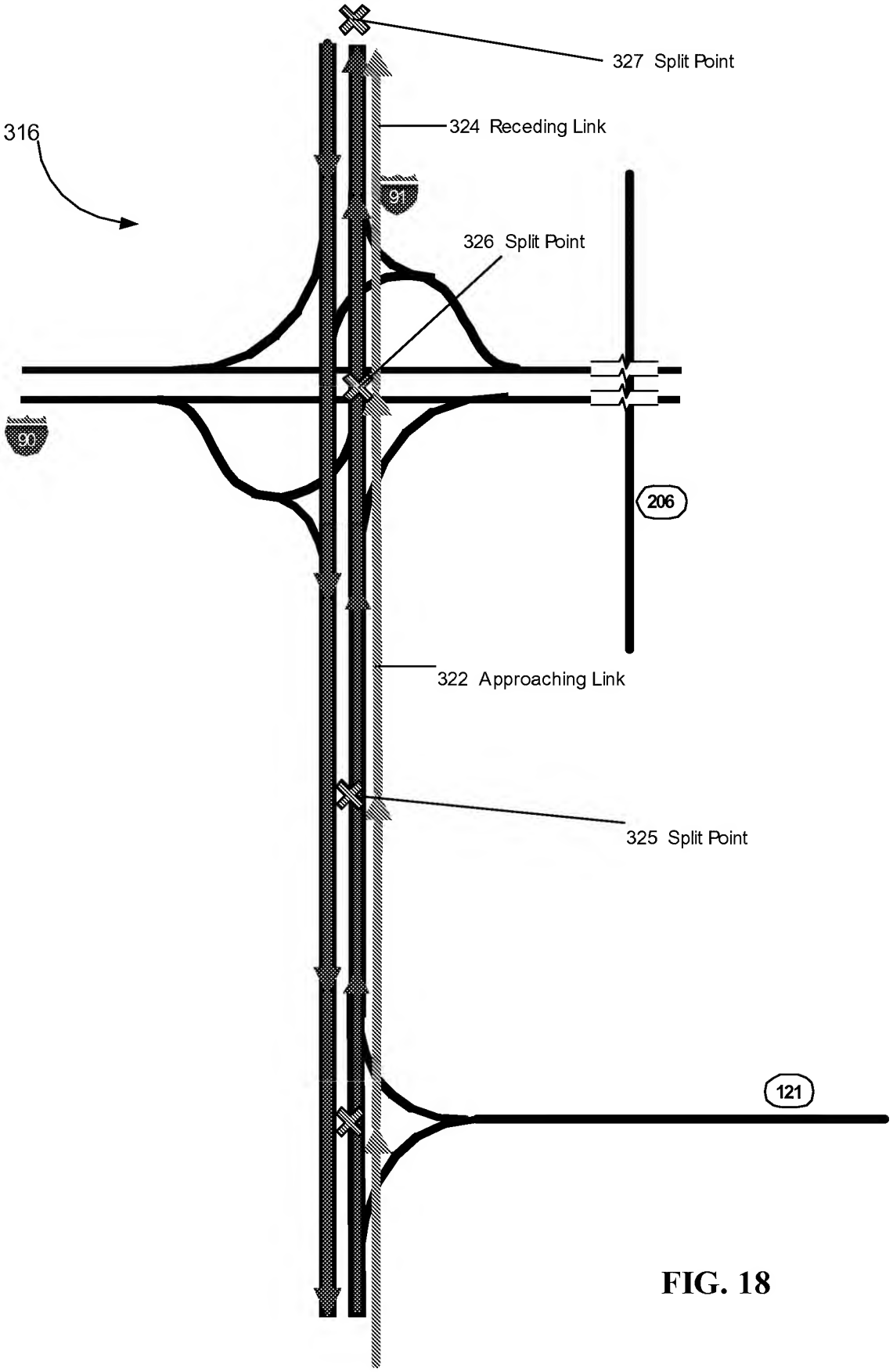



FIG. 18

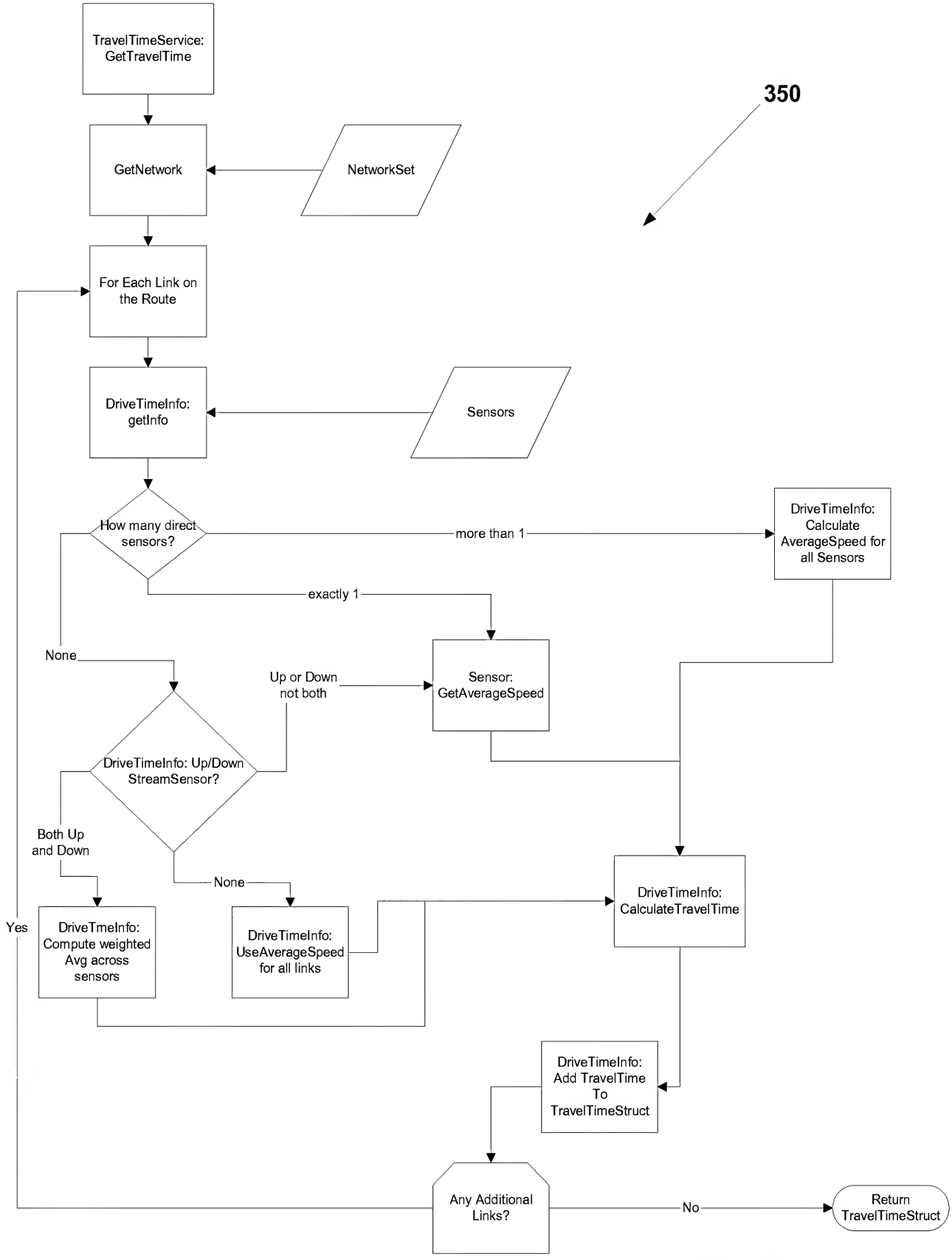

TravelTimeService: GetTravelTime
350
GetNetwork
NetworkSet
For Each Link on the Route
DriveTimeInfo: getInfo
Sensors
How many direct sensors?
more than 1
DriveTimeInfo: Calculate AverageSpeed for all Sensors
exactly 1
None
Up or Down not both
Sensor: GetAverageSpeed
DriveTimeInfo: Up/Down StreamSensor?
Both Up and Down
None
Yes
DriveTmeInfo: Compute weighted Avg across sensors
DriveTimeInfo: UseAverageSpeed for all links
DriveTimeInfo: CalculateTravelTime
DriveTimeInfo: Add TravelTime To TravelTimeStruct
Any Additional Links?
No
Return TravelTimeStruct

FIG. 19

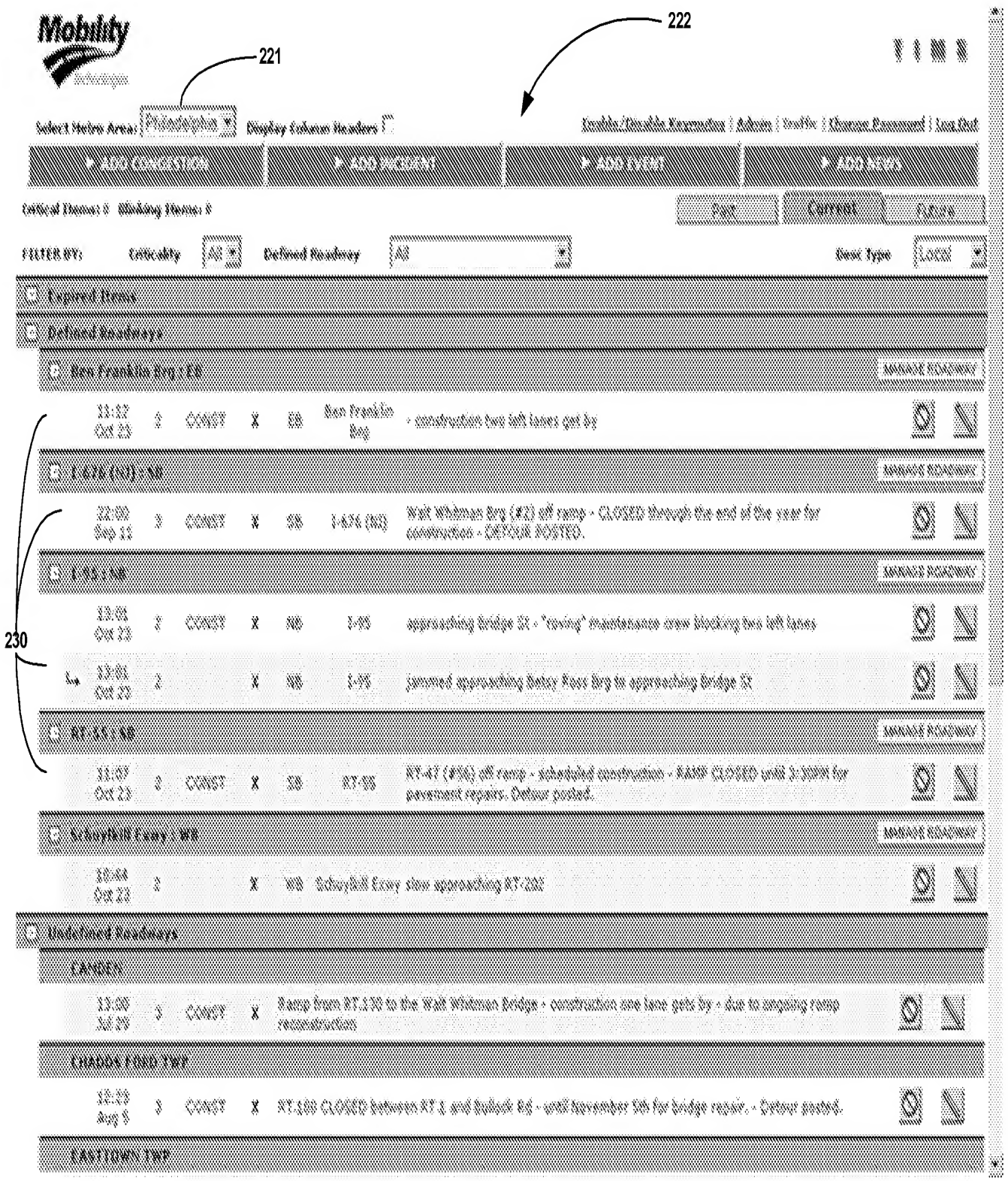

Mobility
221
222
230
Select Metro Area:
Philadelphia
Display Column Headers?
Enable/Disable Keyboard
Admin
Profile
Change Password
Log Out
Add Construction
Add Incident
Add Event
Add Area
Past
Current
Future
FILTER BY:
Criticality
All
Defined Roadway
All
Event Type
Local
Expired Items
Defined Roadways
Ben Franklin Bvg (EB
MANAGE ROADWAY
11:32 Oct 23
2
CONST
X
EB
Ben Franklin Bvg
- construction two left lanes get by
I-676 (NJ) - NB
MANAGE ROADWAY
22:00 Sep 11
3
CONST
X
NB
I-676 (NJ)
Walt Whitman Brg (#2) off ramp - CLOSED through the end of the year for construction - DETOUR POSTED.
I-95 - NB
MANAGE ROADWAY
13:03 Oct 23
2
CONST
X
NB
I-95
approaching Bridge St - "roving" maintenance crew blocking two left lanes
13:01 Oct 23
2
X
NB
I-95
jammed approaching Betsy Ross Brg to approaching Bridge St
RT-47 - NB
MANAGE ROADWAY
11:07 Oct 23
2
CONST
X
NB
RT-47
RT-47 (#556) off ramp - scheduled construction - RAMP CLOSED until 3:00PM for pavement repairs. Detour posted.
Schuylkill Expy - WB
MANAGE ROADWAY
10:44 Oct 23
2
X
WB
Schuylkill Expy slow approaching RT-202
Undefined Roadways
EXPIRED
13:00 Jul 09
3
CONST
X
Ramp from RT-130 to the Walt Whitman Bridge - construction one lane gets by - due to ongoing ramp reconstruction
CHADDS FORD TWP
12:59 Aug 5
3
CONST
X
RT-100 CLOSED between RT 1 and Baltusrol Rd - until November 5th for bridge repair. - Detour posted.
EAST GOSHEN TWP

FIG. 20

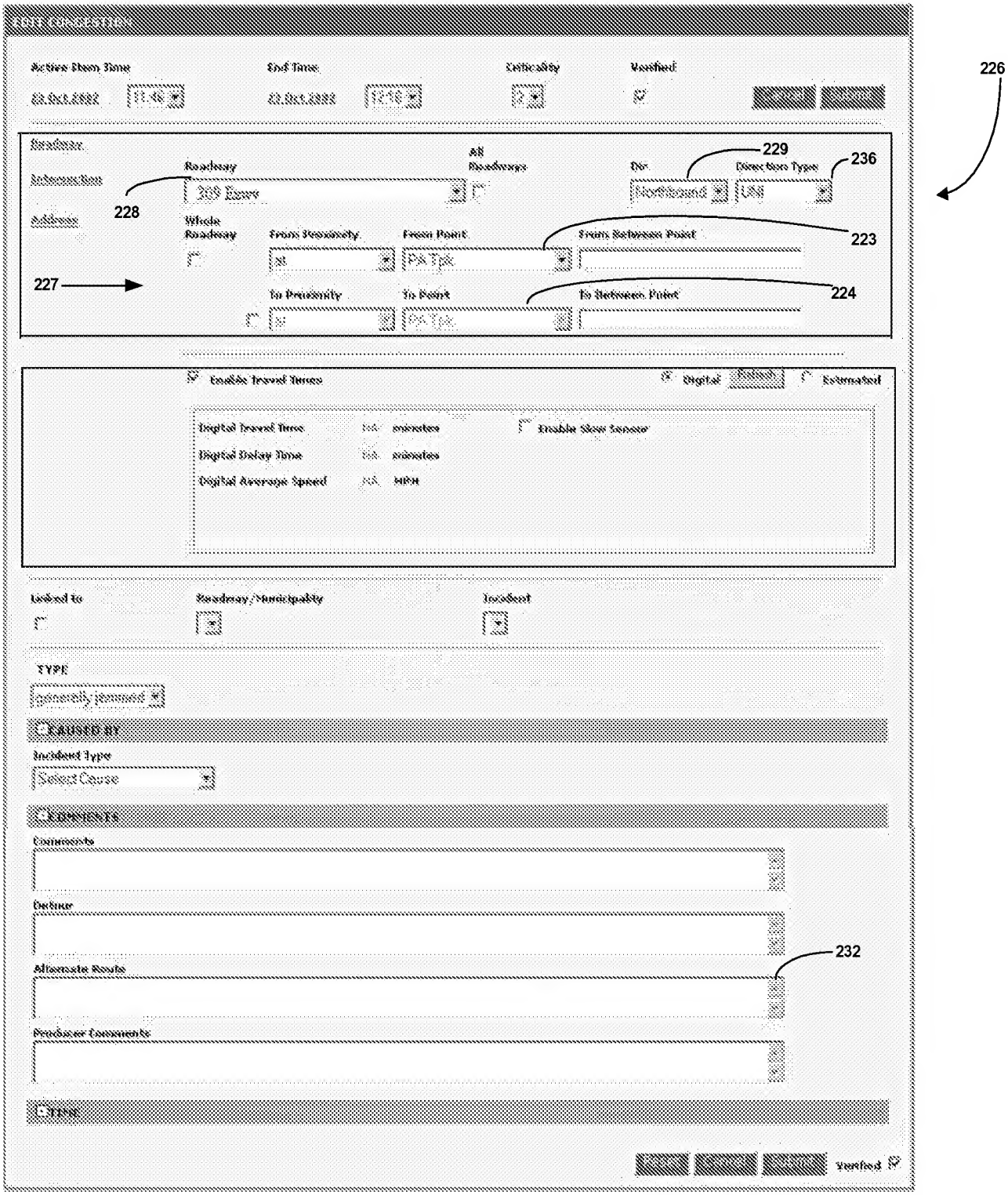



FIG. 21

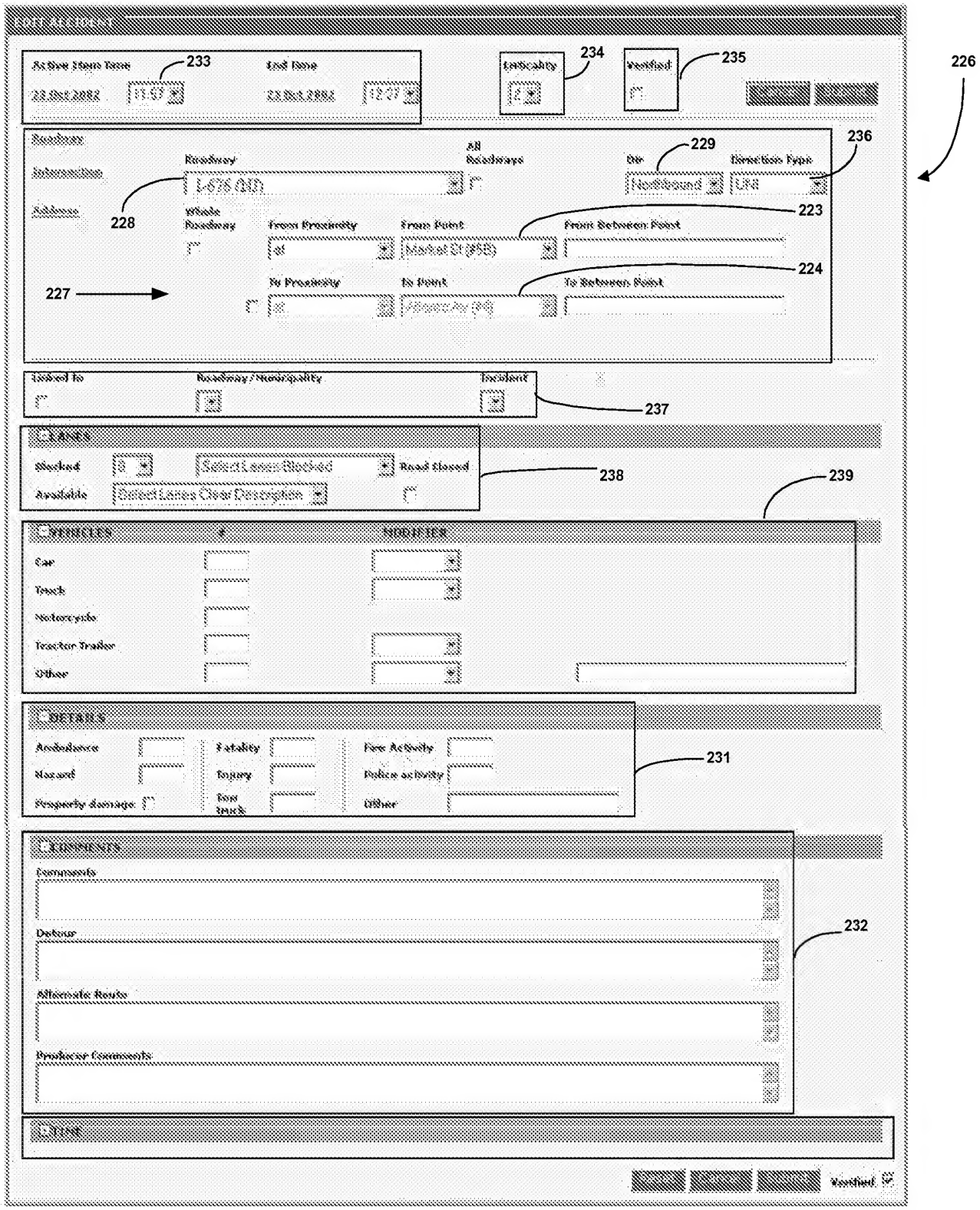



FIG. 22

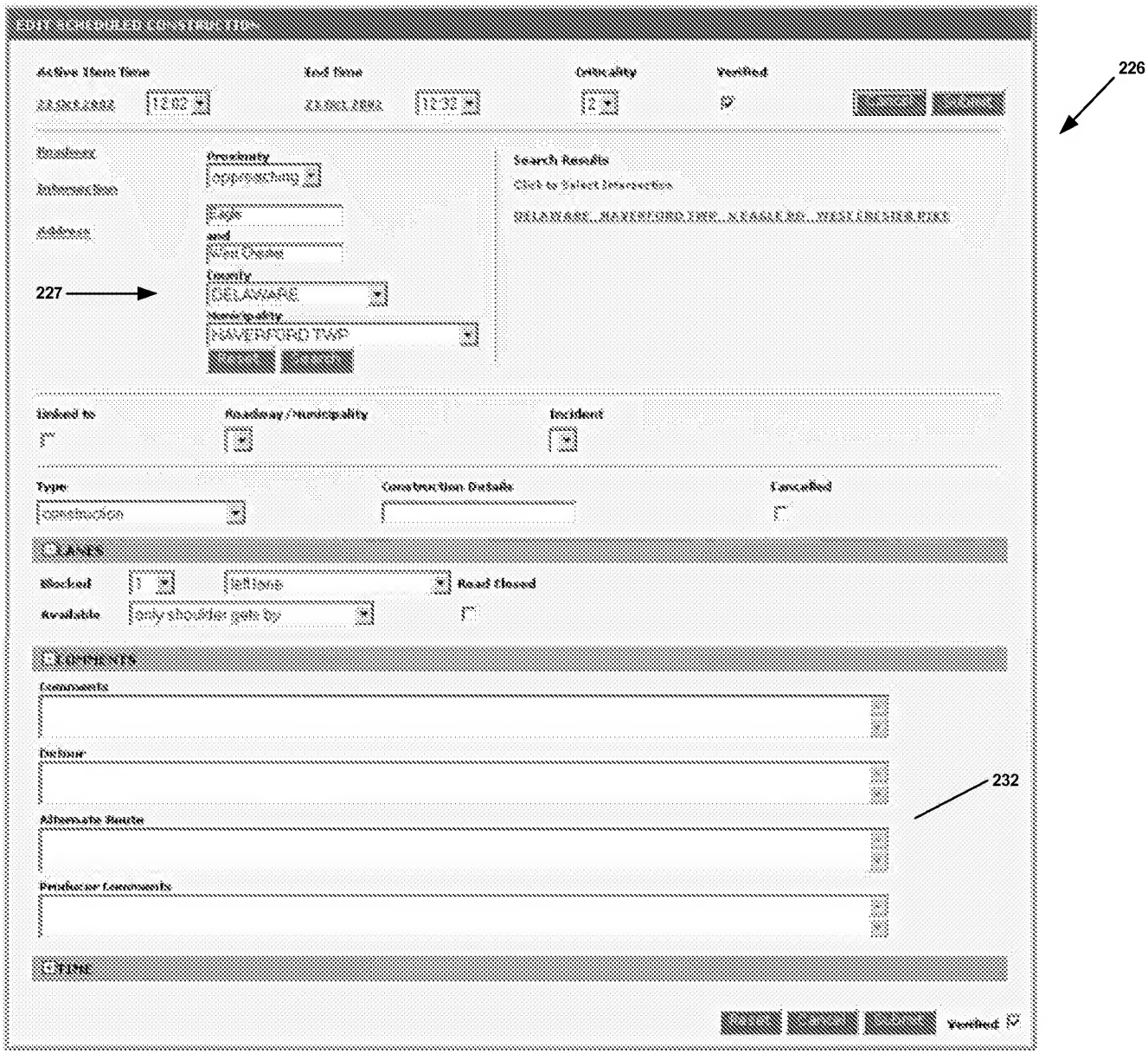

226
227
232
Active Item Time
End Time
Criticality
Verified
Proximity
Approaching
Search Results
Click to Select Intersection
Address
and
County
DELAWARE
Municipality
HAVERFORD TWP
Linked to
Roadway / Municipality
Incident
Type
Construction Details
Cancelled
Blocked
Road Closed
Available
Comments
Detour
Alternate Route
Roadway Comments
Verified

FIG. 23

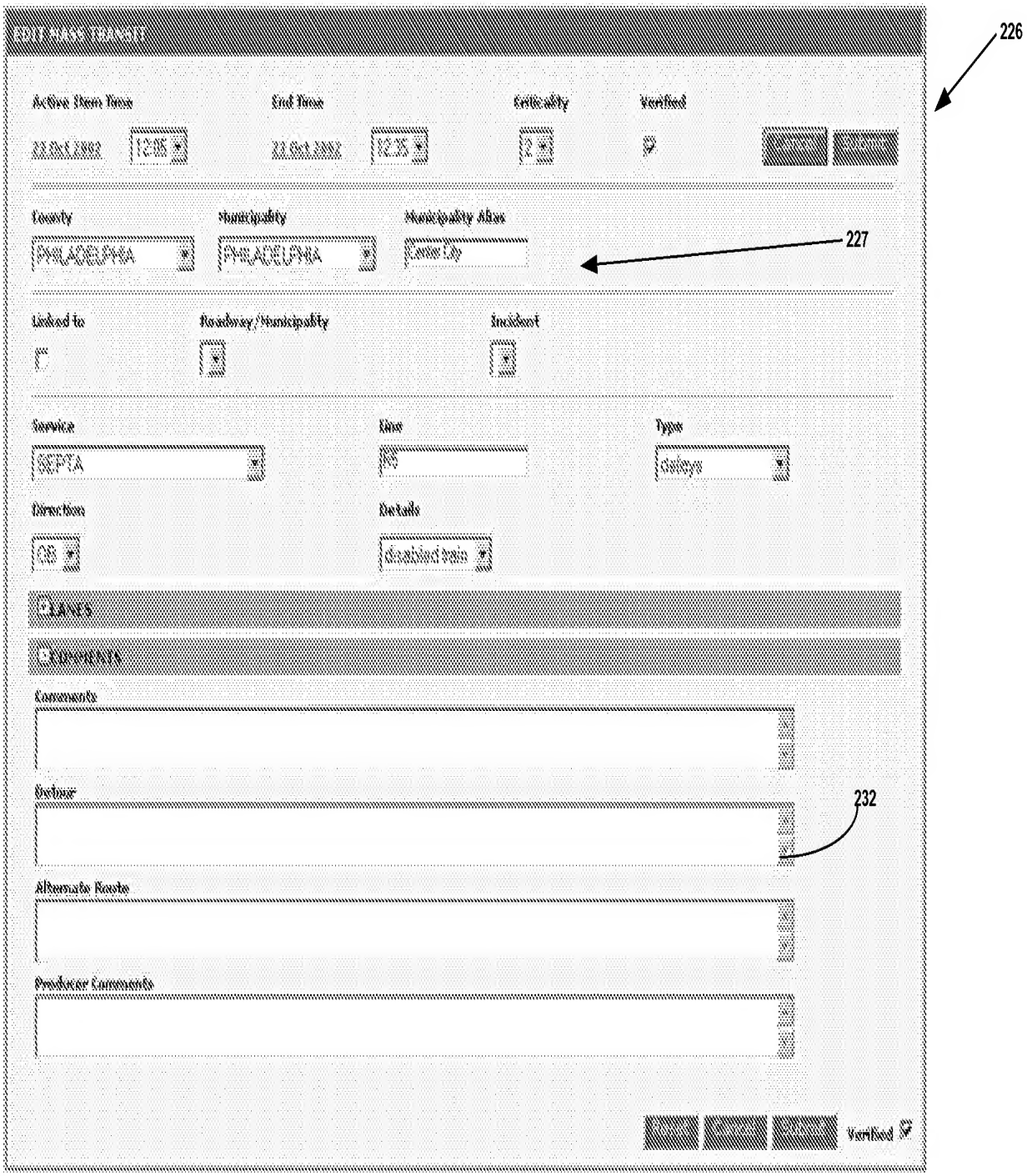

226
227
232
EDIT ITEM TRANSIT
Active Item Time
End Time
Criticality
Verified
County
Municipality
Municipality Alias
Linked to
Roadway/Municipality
Incident
Service
Line
Type
Direction
Details
TAGS
COMMENTS
Comments
Detour
Alternate Route
Producer Comments
Verified

FIG. 24

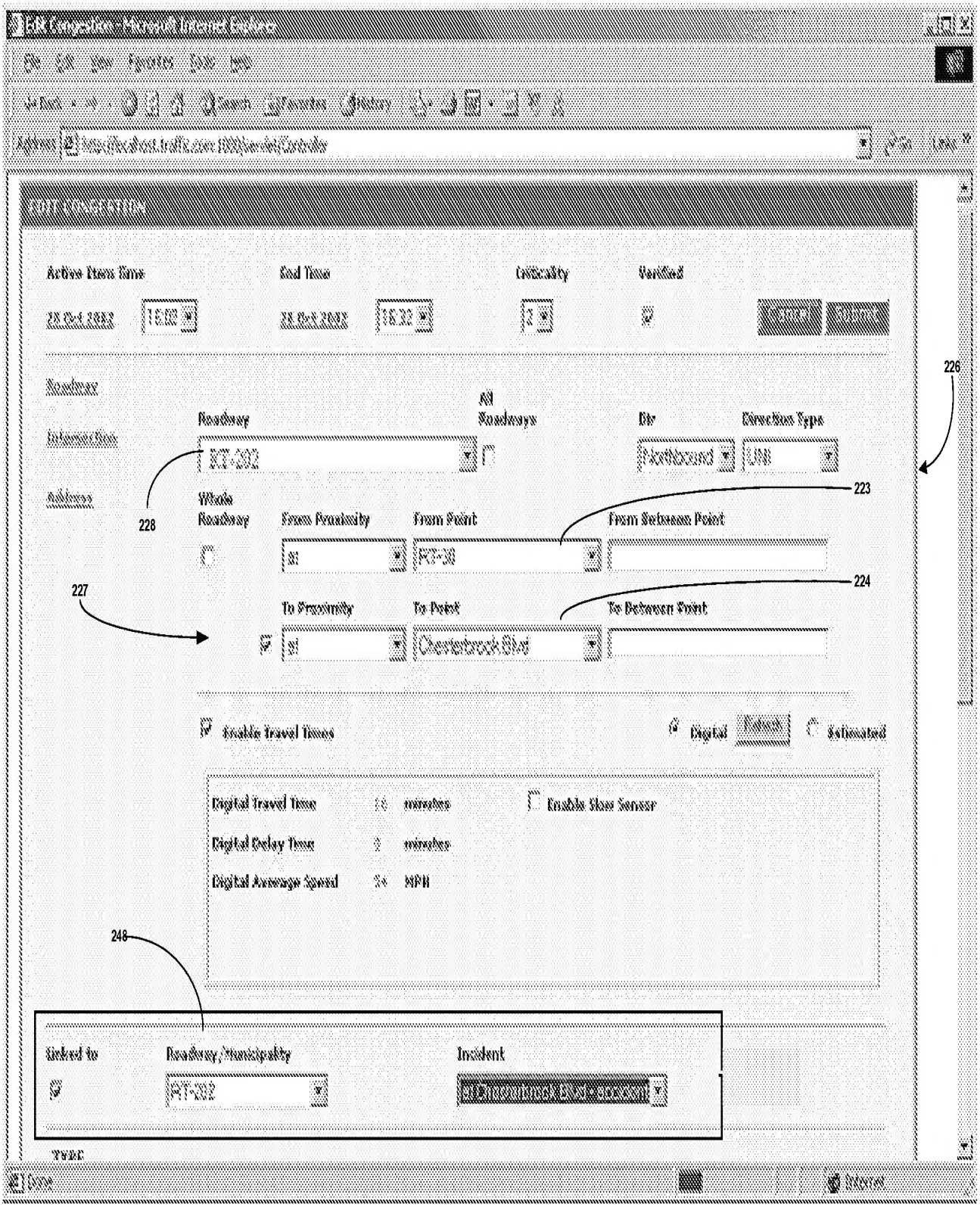

Active Item Time
End Time
Criticality
Verified
Roadway
Intersection
Address
Roadway
All Roadways
Dir
Direction Type
Whole Roadway
From Proximity
From Point
From Between Point
To Proximity
To Point
To Between Point
Enable Travel Times
Digital
Estimated
Digital Travel Time
minutes
Enable Slow Sensor
Digital Delay Time
minutes
Digital Average Speed
MPH
Linked to
Roadway, Municipality
Incident
226
228
223
224
227
248

FIG. 25

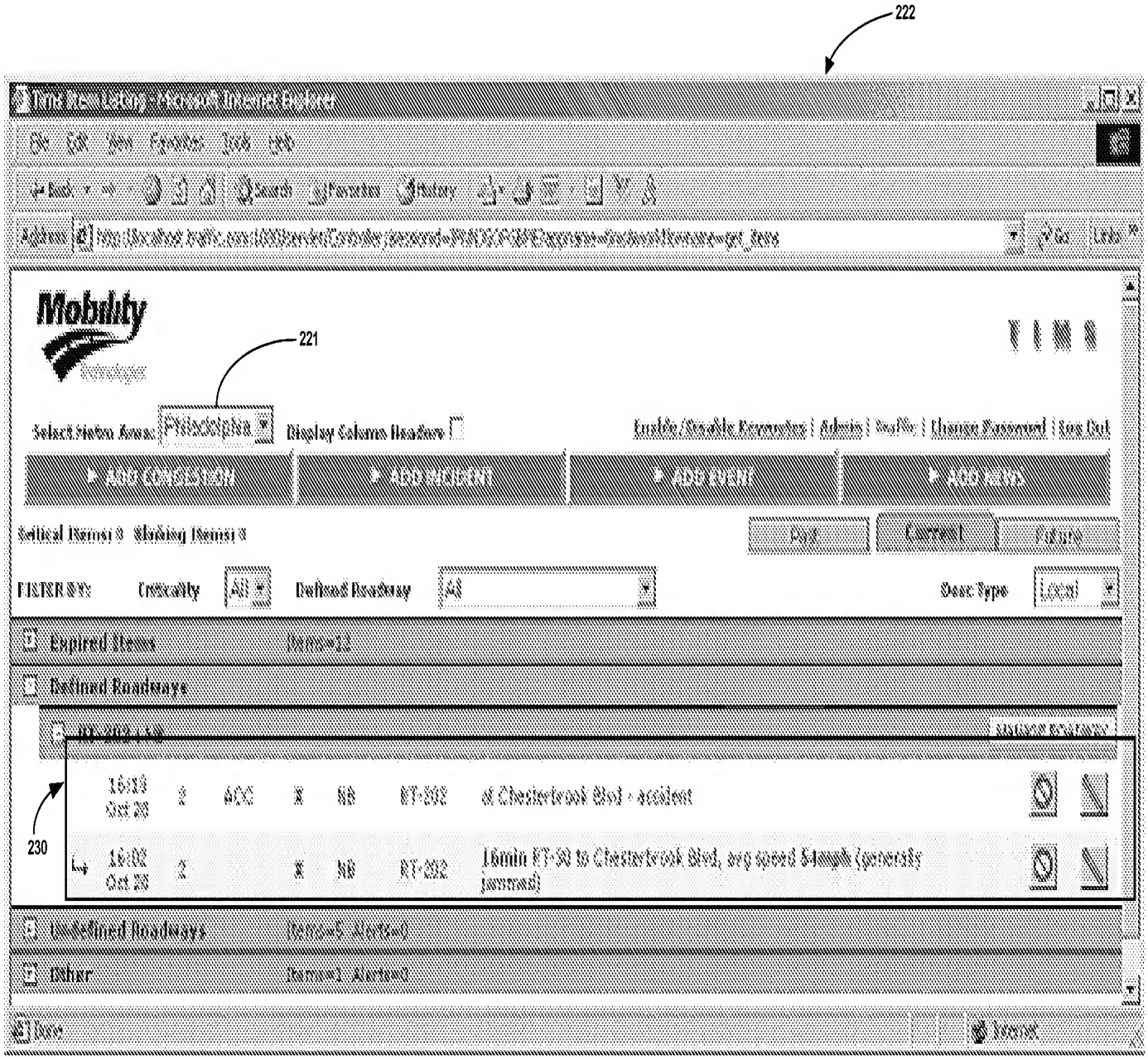



FIG. 26

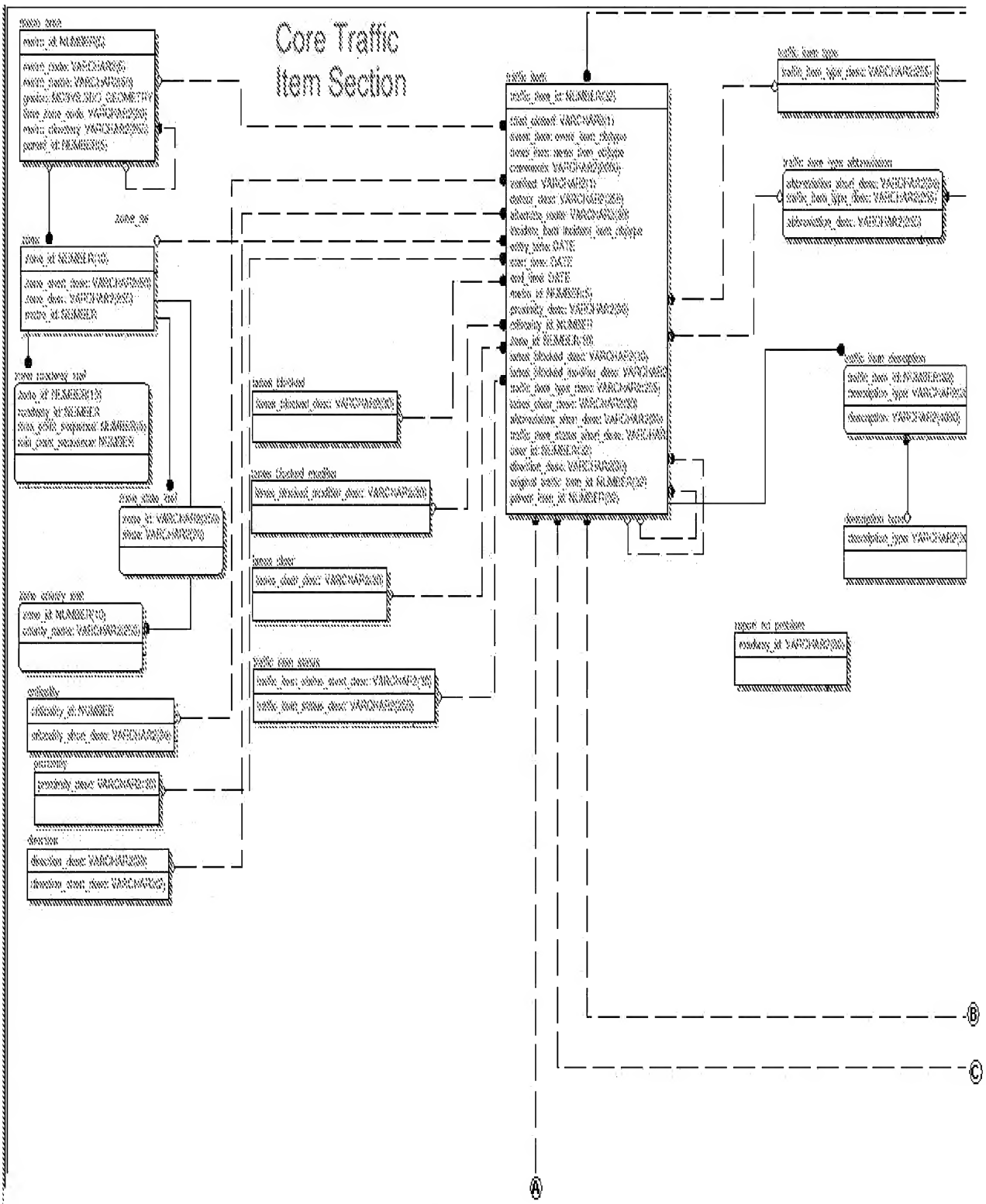



FIG. 27

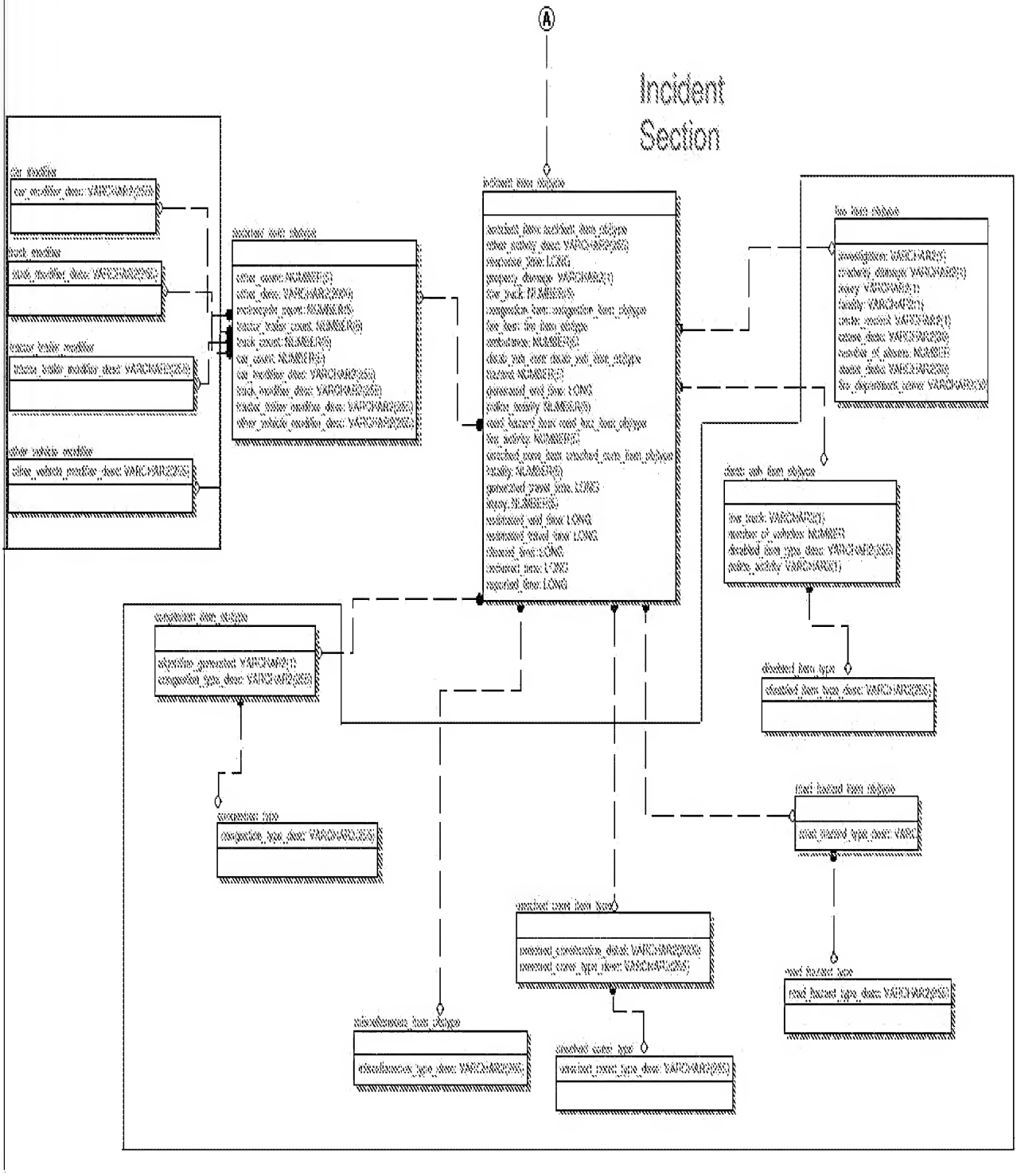



FIG. 28

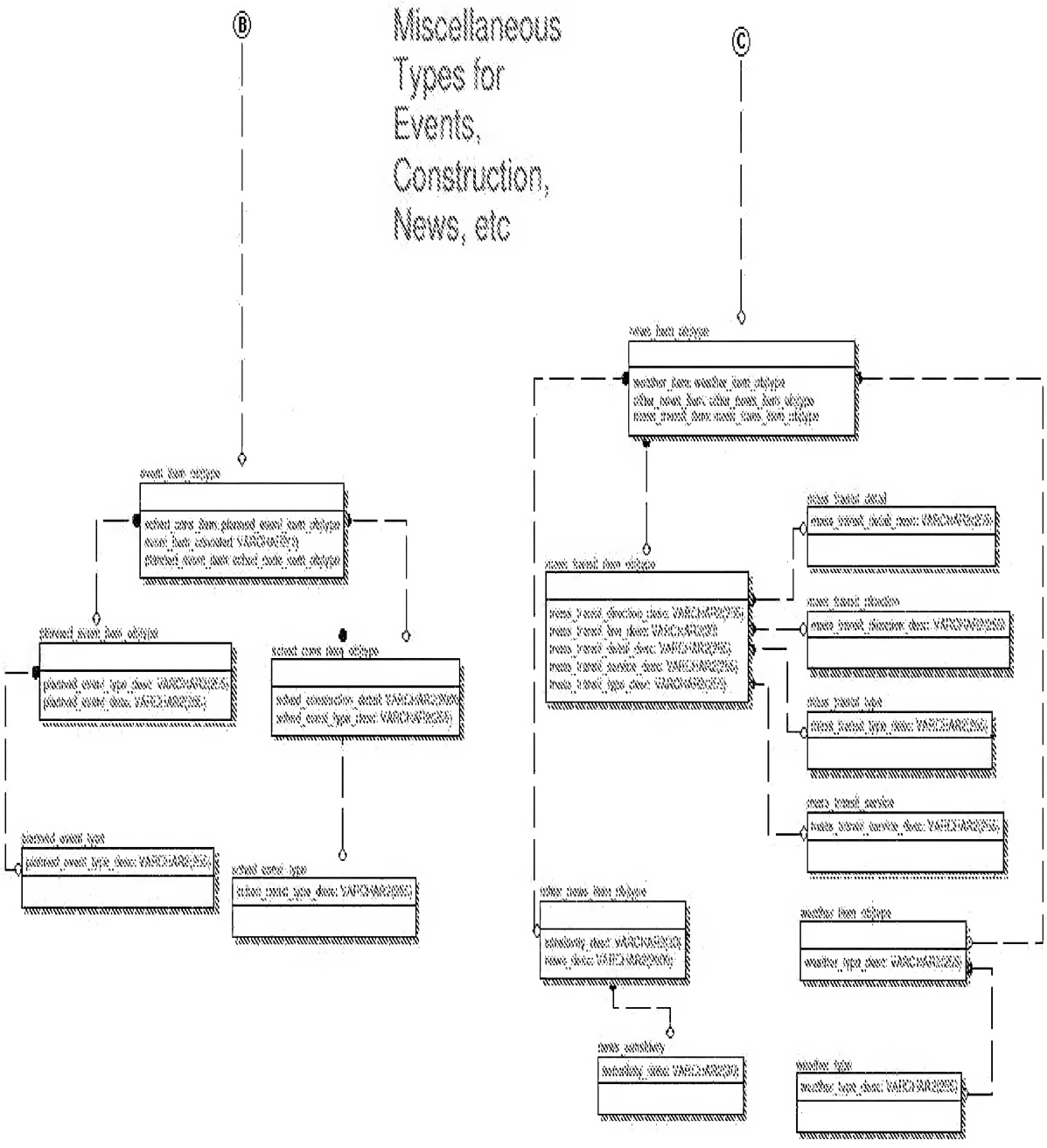



FIG. 29

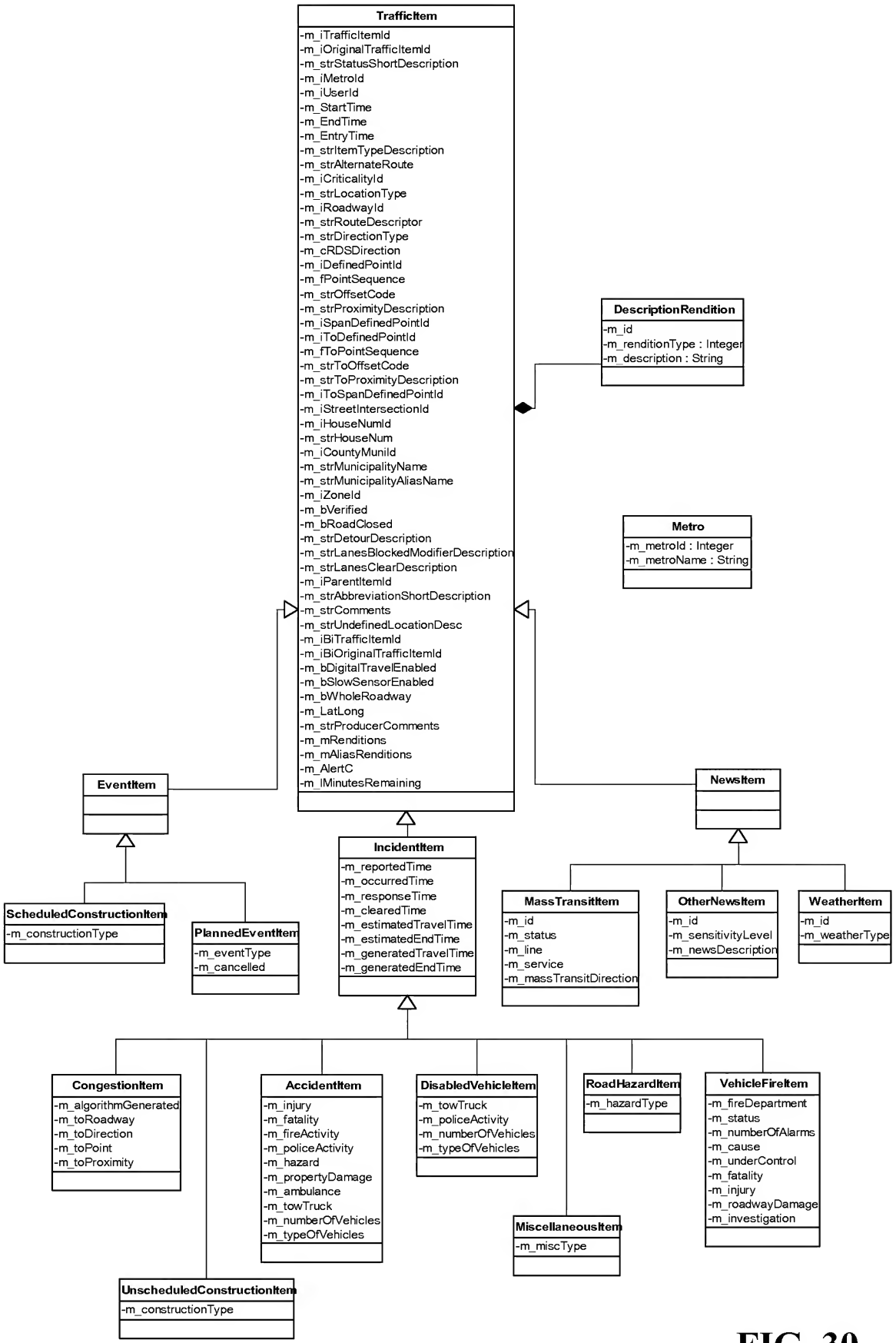

TrafficItem
-m_iTrafficItemId
-m_iOriginalTrafficItemId
-m_strStatusShortDescription
-m_iMetroId
-m_iUserId
-m_StartTime
-m_EndTime
-m_EntryTime
-m_strItemTypeDescription
-m_strAlternateRoute
-m_iCriticalityId
-m_strLocationType
-m_iRoadwayId
-m_strRouteDescriptor
-m_strDirectionType
-m_cRDSDirection
-m_iDefinedPointId
-m_fPointSequence
-m_strOffsetCode
-m_strProximityDescription
-m_iSpanDefinedPointId
-m_iToDefinedPointId
-m_fToPointSequence
-m_strToOffsetCode
-m_strToProximityDescription
-m_iToSpanDefinedPointId
-m_iStreetIntersectionId
-m_iHouseNumId
-m_strHouseNum
-m_iCountyMuniId
-m_strMunicipalityName
-m_strMunicipalityAliasName
-m_iZoneId
-m_bVerified
-m_bRoadClosed
-m_strDetourDescription
-m_strLanesBlockedModifierDescription
-m_strLanesClearDescription
-m_iParentItemId
-m_strAbbreviationShortDescription
-m_strComments
-m_strUndefinedLocationDesc
-m_iBiTrafficItemId
-m_iBiOriginalTrafficItemId
-m_bDigitalTravelEnabled
-m_bSlowSensorEnabled
-m_bWholeRoadway
-m_LatLong
-m_strProducerComments
-m_mRenditions
-m_mAliasRenditions
-m_AlertC
-m_lMinutesRemaining
DescriptionRendition
-m_id
-m_renditionType : Integer
-m_description : String
Metro
-m_metroId : Integer
-m_metroName : String
EventItem
NewsItem
IncidentItem
-m_reportedTime
-m_occurredTime
-m_responseTime
-m_clearedTime
-m_estimatedTravelTime
-m_estimatedEndTime
-m_generatedTravelTime
-m_generatedEndTime
ScheduledConstructionItem
-m_constructionType
PlannedEventItem
-m_eventType
-m_cancelled
MassTransitItem
-m_id
-m_status
-m_line
-m_service
-m_massTransitDirection
OtherNewsItem
-m_id
-m_sensitivityLevel
-m_newsDescription
WeatherItem
-m_id
-m_weatherType
CongestionItem
-m_algorithmGenerated
-m_toRoadway
-m_toDirection
-m_toPoint
-m_toProximity
AccidentItem
-m_injury
-m_fatality
-m_fireActivity
-m_policeActivity
-m_hazard
-m_propertyDamage
-m_ambulance
-m_towTruck
-m_numberOfVehicles
-m_typeOfVehicles
DisabledVehicleItem
-m_towTruck
-m_policeActivity
-m_numberOfVehicles
-m_typeOfVehicles
RoadHazardItem
-m_hazardType
VehicleFireItem
-m_fireDepartment
-m_status
-m_numberOfAlarms
-m_cause
-m_underControl
-m_fatality
-m_injury
-m_roadwayDamage
-m_investigation
MiscellaneousItem
-m_miscType
UnscheduledConstructionItem
-m_constructionType

FIG. 30

```
<?xml version="1.0" encoding="UTF-8"?>
 <definedroadways>
 <road>
  <road_name>RT-202</road_name>
  <road_id>98</road_id>
   <road_ebucountrycode>1</road_ebucountrycode>
   <road_tableid>3</road_tableid>
   <road_locid>00103</road_locid>
   <directions>
    <direction>
     <direction_type>+</direction_type>
     <direction_name>Northbound</direction_name>
    </direction>
    <direction>
     <direction_type>-</direction_type>
     <direction_name>Southbound</direction_name>
    </direction>
   </directions>
   <points>
    <point>
     <point_name>RT-100 Spur</point_name>
     <point_id>396</point_id>
     <point_locid>04466</point_locid>
     <point_sequence>2.0</point_sequence>
     <mids>
      <mid>
       <mid_type>+</mid_type>
       <mid_id>397</mid_id>
       <mid_locid>04467</mid_locid>
       <mid_name>Boot Rd</mid_name>
      </mid>
      <mid>
       <mid_type>-</mid_type>
       <mid_id>395</mid_id>
       <mid_locid>04465</mid_locid>
       <mid_name>RT-322</mid_name>
      </mid>
     </mids>
    </point>
   </points>
 </road>
</definedroadways>
```

FIG. 31

**Tables Relating XML Nodes and Corresponding Database Tables and Database Columns**

**ROADWAY NODES**

| XML Node | Database Table | Database Column |
|---|---|---|
| road_name 1 | ROADWAY_ALIAS 275 | ALIAS 275 |
| road_id 1 | ROADWAY 276 | ROADWAY_ID 276 |

**DIRECTION NODES**

| XML Node | Database Table | Database Column |
|---|---|---|
| direction_name 2 | ROADWAY_DIRECTION_ALIAS 274 | POS_DIR 274<br>NEG_DIR 274 |

**POINT NODES**

| XML Node | Database Table | Database Column |
|---|---|---|
| point_name 3 | POINT_ALIAS 262 | ALIAS 262 |
| point_id 3 | POINT 266 | POINT_ID 266 |
| point_sequence 3 | ROADWAY_POINT_XREF 269 | POINT_SEQUENCE 269 |

**MID NODES**

| XML Node | Database Table | Database Column |
|---|---|---|
| mid_type 4 | OFFSET 268 | RDS_DIRECTION 268 |
| mid_id 4 | OFFSET 268 | RELATED_POINT_ID 268 |
| mid_name 4 | POINT_ALIAS 262 | ALIAS 262 |

**FIG. 32**

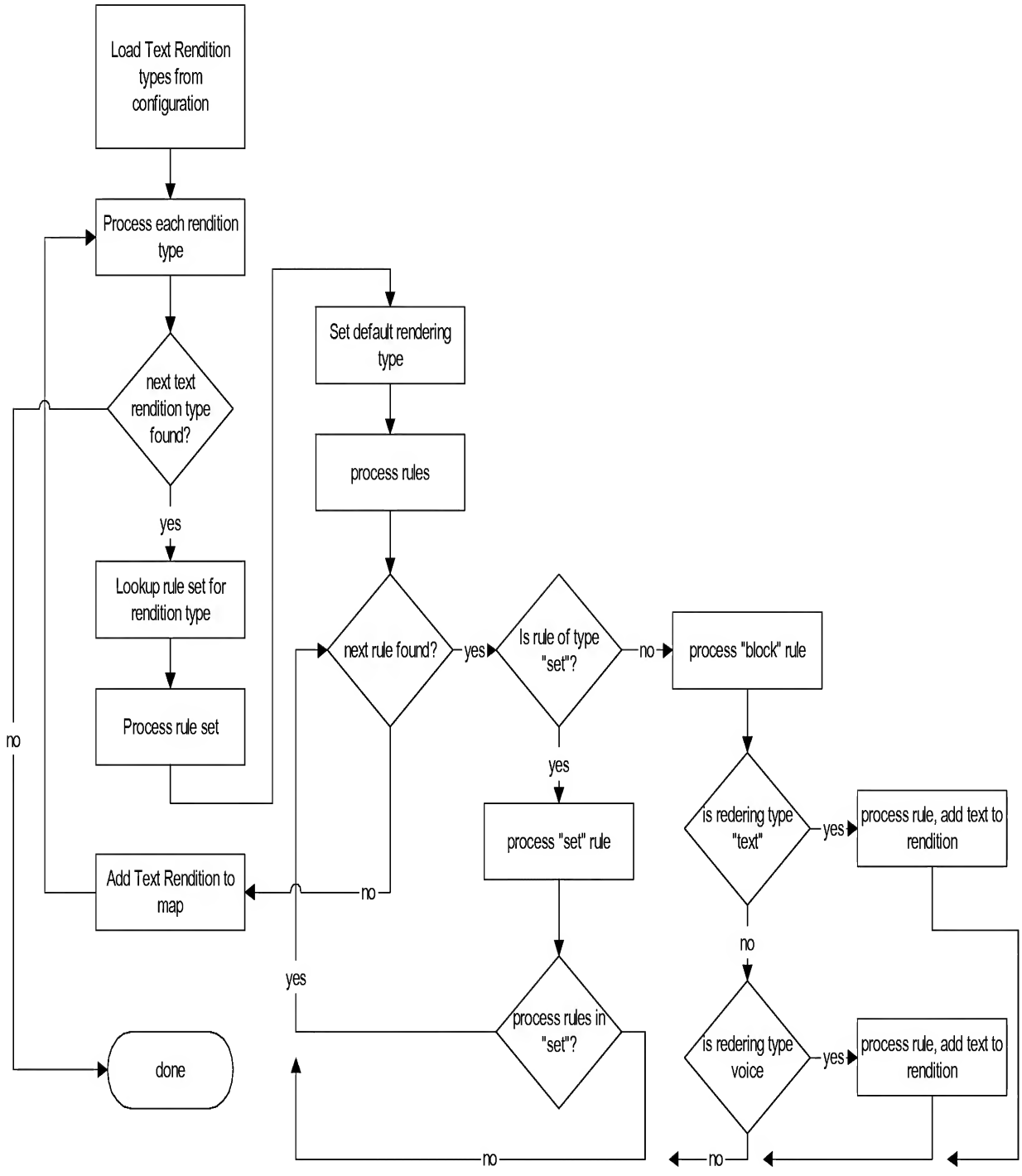

Load Text Rendition types from configuration
Process each rendition type
next text rendition type found?
yes
no
Lookup rule set for rendition type
Process rule set
Add Text Rendition to map
done
Set default rendering type
process rules
next rule found?
yes
no
Is rule of type "set"?
yes
no
process "set" rule
process rules in "set"?
yes
no
process "block" rule
is redering type "text"
yes
process rule, add text to rendition
no
is redering type voice
yes
process rule, add text to rendition
no

FIG. 33

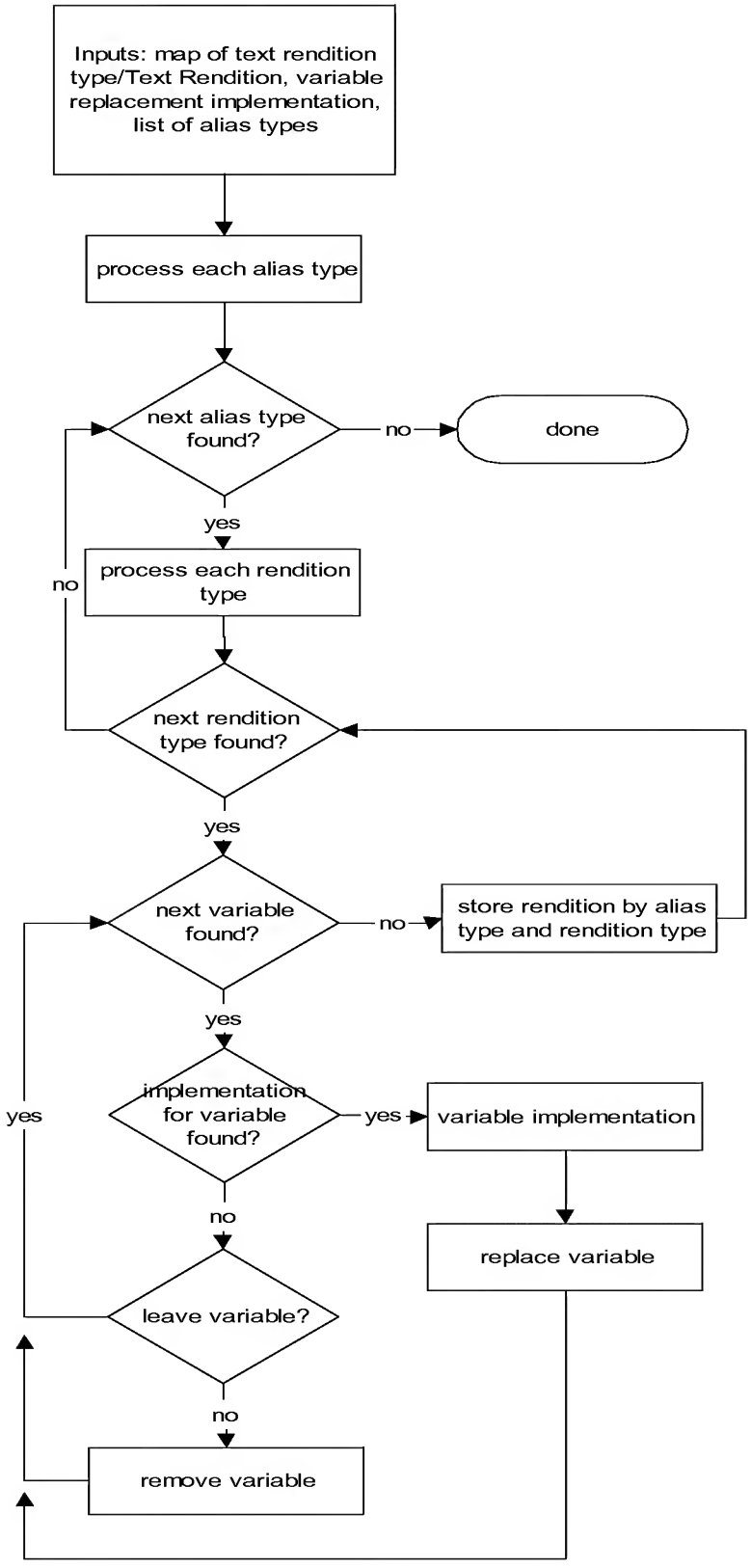

Inputs: map of text rendition type/Text Rendition, variable replacement implementation, list of alias types
process each alias type
next alias type found?
no
done
yes
process each rendition type
no
next rendition type found?
yes
next variable found?
no
store rendition by alias type and rendition type
yes
implementation for variable found?
yes
variable implementation
yes
no
replace variable
leave variable?
no
remove variable

FIG. 34

```
<TextRenditions>

 <TextRendition name="locname" aliastype="LOCAL" type="text">
  <TextBlockSetGroup key="locname" />
 </TextRendition>

 <TextBlockGroup name="locname">
  <TextBlockSetConditionalEquals key="LOCATION_TYPE" value="defined">
   <TextBlockConstant constant="$[ROAD_NAME," type="text" />
   <TextBlockMapValue key="ROADWAY_ID" type="text" />
   <TextBlockGetRoadName roadidkey="ROADWAY_ID" metroidkey="METRO_ID" type="voice"/>
   <TextBlockConstant constant="]" type="text" />
  </TextBlockSetConditionalEquals>
  <TextBlockSetConditionalEquals key="LOCATION_TYPE" value="undefined">
   <TextBlockSetGroup key="municipality_location" />
  </TextBlockSetConditionalEquals>
  <TextBlockSetConditionalEquals key="LOCATION_TYPE" value="municipality">
   <TextBlockSetGroup key="municipality_location" />
  </TextBlockSetConditionalEquals>
  <TextBlockSetConditionalEquals key="LOCATION_TYPE" value="metro">
   <!-- No location for metro -->
  </TextBlockSetConditionalEquals>
 </TextBlockGroup>

 <TextBlockGroup name="municipality_location">
  <TextBlockSetConditionalNull key="MUNI_ALIAS">
   <TextBlockMapValue key="MUNI_NAME" />
  </TextBlockSetConditionalNull>
  <TextBlockSetConditionalNotNull key="MUNI_ALIAS">
   <TextBlockMapValue key="MUNI_ALIAS" />
  </TextBlockSetConditionalNotNull>
 </TextBlockGroup>

</TextRenditions>
```

**FIG. 35**

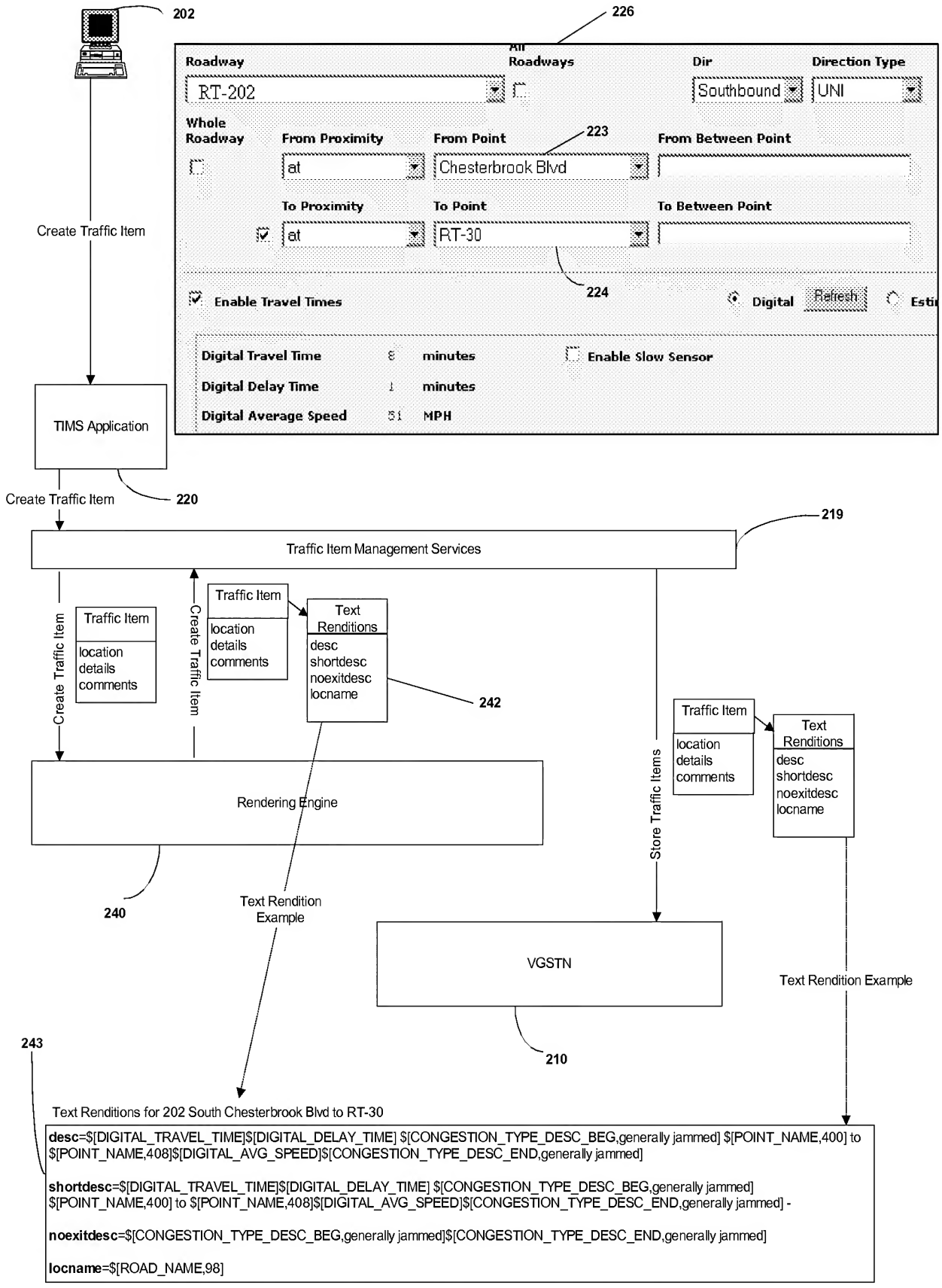

202
226
Roadway
All Roadways
Dir
Direction Type
RT-202
Southbound
UNI
Whole Roadway
From Proximity
From Point
223
From Between Point
at
Chesterbrook Blvd
To Proximity
To Point
To Between Point
at
RT-30
224
Enable Travel Times
Digital
Refresh
Digital Travel Time
8
minutes
Enable Slow Sensor
Digital Delay Time
1
minutes
Digital Average Speed
31
MPH
Create Traffic Item
TIMS Application
Create Traffic Item
220
219
Traffic Item Management Services
Traffic Item
location
details
comments
Create Traffic Item
Traffic Item
location
details
comments
Text Renditions
desc
shortdesc
noexitdesc
locname
242
Create Traffic Item
Rendering Engine
240
Text Rendition Example
Store Traffic Items
Traffic Item
location
details
comments
Text Renditions
desc
shortdesc
noexitdesc
locname
VGSTN
210
Text Rendition Example
243
Text Renditions for 202 South Chesterbrook Blvd to RT-30
desc=$[DIGITAL_TRAVEL_TIME]$[DIGITAL_DELAY_TIME] $[CONGESTION_TYPE_DESC_BEG,generally jammed] $[POINT_NAME,400] to $[POINT_NAME,408]$[DIGITAL_AVG_SPEED]$[CONGESTION_TYPE_DESC_END,generally jammed]
shortdesc=$[DIGITAL_TRAVEL_TIME]$[DIGITAL_DELAY_TIME] $[CONGESTION_TYPE_DESC_BEG,generally jammed] $[POINT_NAME,400] to $[POINT_NAME,408]$[DIGITAL_AVG_SPEED]$[CONGESTION_TYPE_DESC_END,generally jammed] -
noexitdesc=$[CONGESTION_TYPE_DESC_BEG,generally jammed]$[CONGESTION_TYPE_DESC_END,generally jammed]
locname=$[ROAD_NAME,98]

FIG. 36

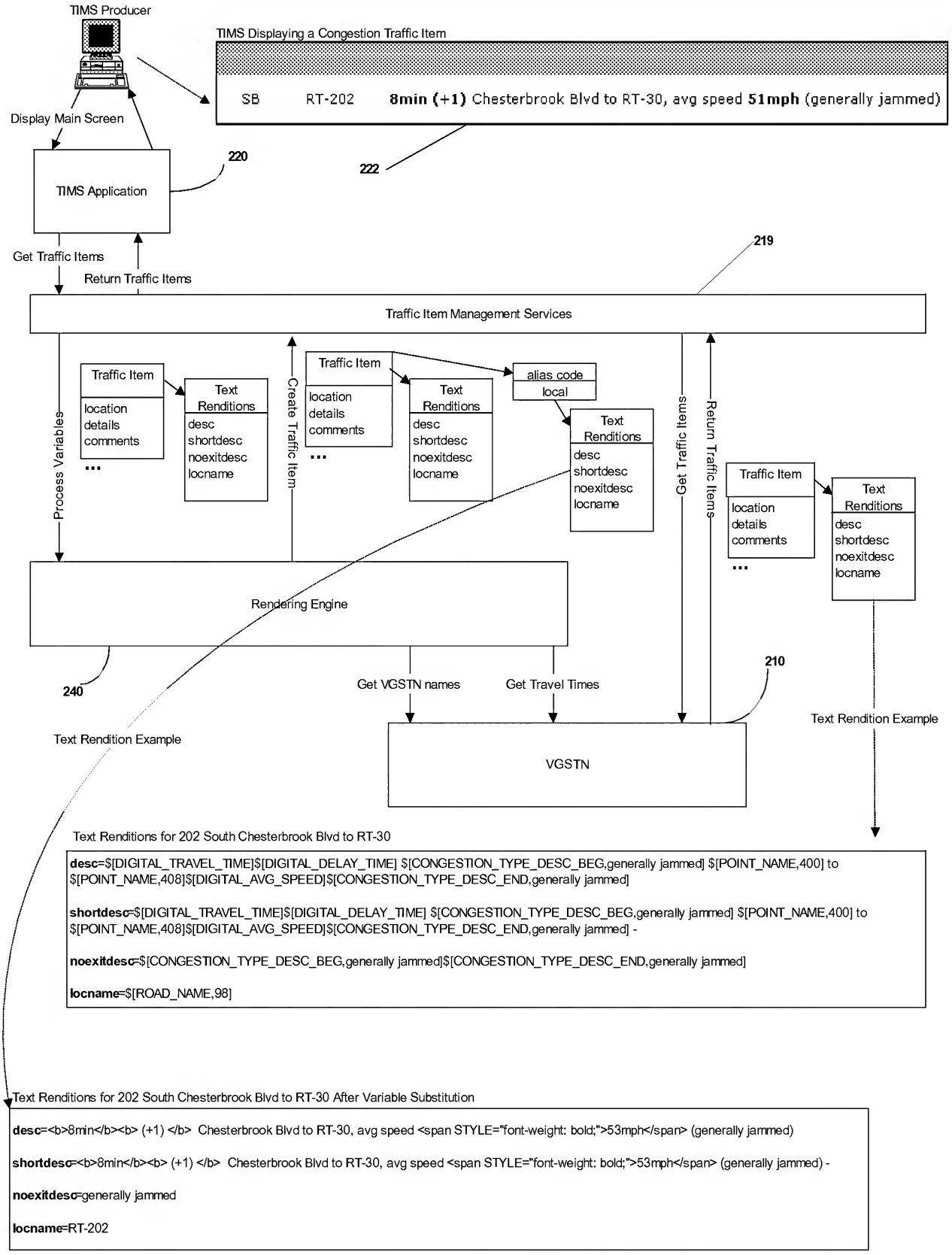

TIMS Producer
TIMS Displaying a Congestion Traffic Item
SB RT-202 8min (+1) Chesterbrook Blvd to RT-30, avg speed 51mph (generally jammed)
Display Main Screen
222
220
TIMS Application
Get Traffic Items
Return Traffic Items
219
Traffic Item Management Services
Traffic Item
location
details
comments
Text Renditions
desc
shortdesc
noexitdesc
locname
Process Variables
Create Traffic Item
alias code
local
Get Traffic Items
Return Traffic Items
Rendering Engine
240
Get VGSTN names
Get Travel Times
210
VGSTN
Text Rendition Example
Text Rendition Example
Text Renditions for 202 South Chesterbrook Blvd to RT-30
desc=$[DIGITAL_TRAVEL_TIME]$[DIGITAL_DELAY_TIME] $[CONGESTION_TYPE_DESC_BEG,generally jammed] $[POINT_NAME,400] to $[POINT_NAME,408]$[DIGITAL_AVG_SPEED]$[CONGESTION_TYPE_DESC_END,generally jammed]
shortdesc=$[DIGITAL_TRAVEL_TIME]$[DIGITAL_DELAY_TIME] $[CONGESTION_TYPE_DESC_BEG,generally jammed] $[POINT_NAME,400] to $[POINT_NAME,408]$[DIGITAL_AVG_SPEED]$[CONGESTION_TYPE_DESC_END,generally jammed] -
noexitdesc=$[CONGESTION_TYPE_DESC_BEG,generally jammed]$[CONGESTION_TYPE_DESC_END,generally jammed]
locname=$[ROAD_NAME,98]
Text Renditions for 202 South Chesterbrook Blvd to RT-30 After Variable Substitution
desc=8min (+1)  Chesterbrook Blvd to RT-30, avg speed 53mph (generally jammed)
shortdesc=8min (+1)  Chesterbrook Blvd to RT-30, avg speed 53mph (generally jammed) -
noexitdesc=generally jammed
locname=RT-202

FIG. 37

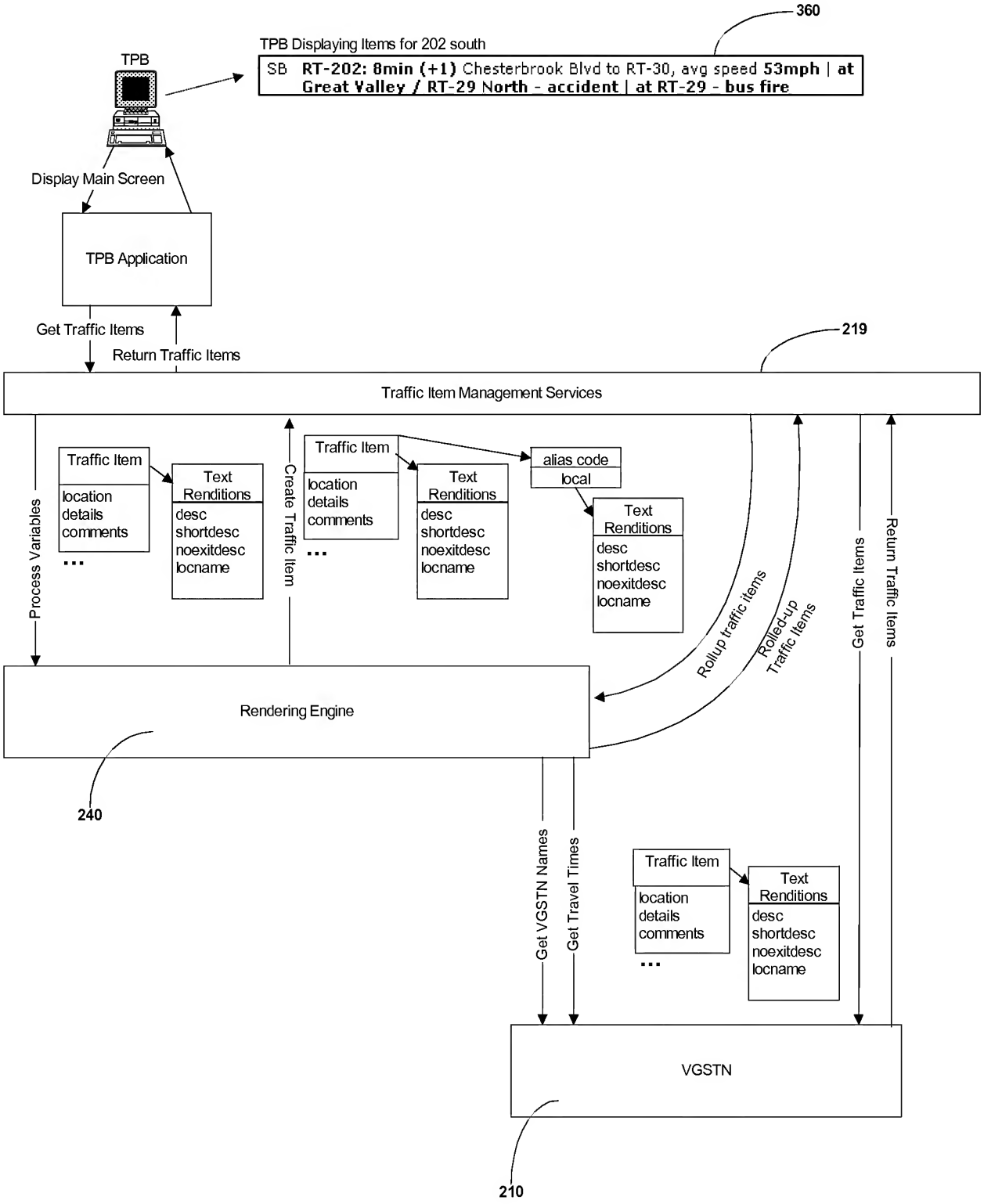

360
TPB Displaying Items for 202 south
SB RT-202: 8min (+1) Chesterbrook Blvd to RT-30, avg speed 53mph | at Great Valley / RT-29 North - accident | at RT-29 - bus fire
TPB
Display Main Screen
TPB Application
Get Traffic Items
Return Traffic Items
219
Traffic Item Management Services
Traffic Item
location
details
comments
Text Renditions
desc
shortdesc
noexitdesc
locname
Create Traffic Item
alias code
local
Process Variables
Rollup traffic items
Rolled-up Traffic Items
Get Traffic Items
Return Traffic Items
Rendering Engine
240
Get VGSTN Names
Get Travel Times
VGSTN
210

FIG. 38

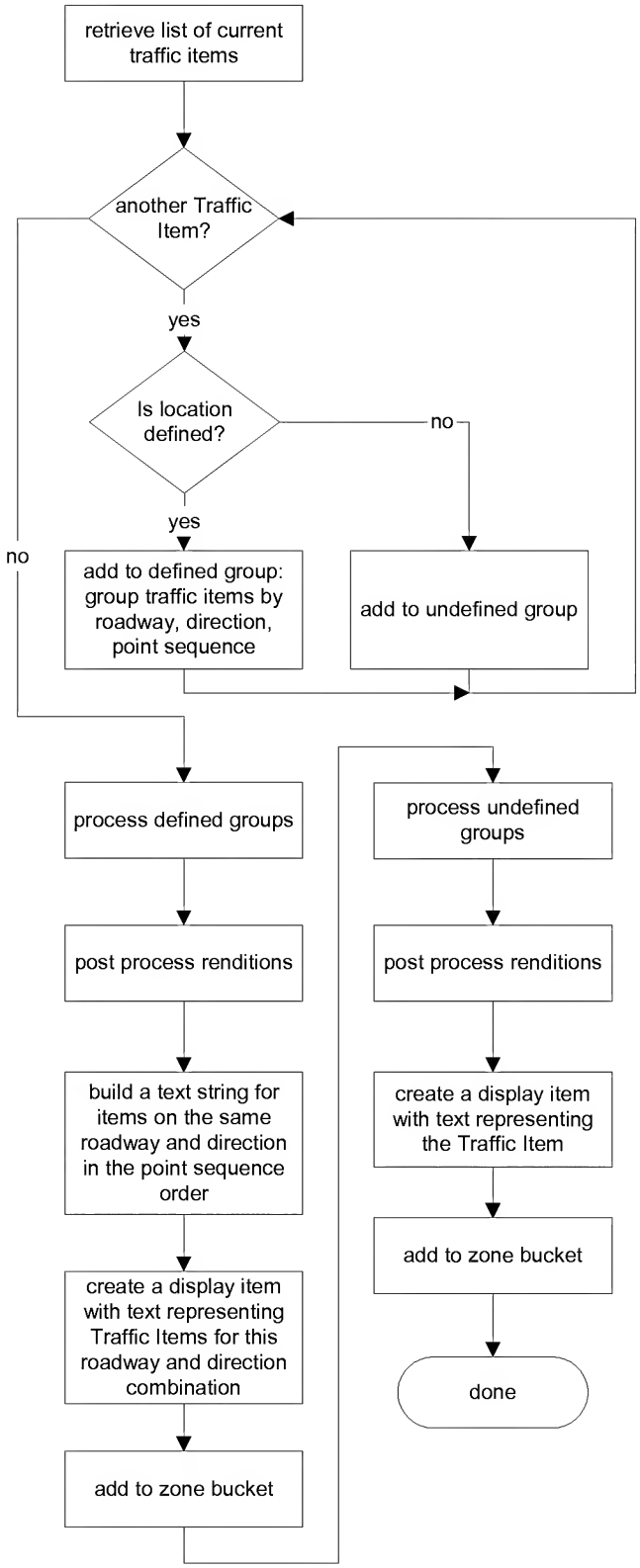

retrieve list of current traffic items
another Traffic Item?
yes
Is location defined?
no
yes
no
add to defined group: group traffic items by roadway, direction, point sequence
add to undefined group
process defined groups
post process renditions
build a text string for items on the same roadway and direction in the point sequence order
create a display item with text representing Traffic Items for this roadway and direction combination
add to zone bucket
process undefined groups
post process renditions
create a display item with text representing the Traffic Item
add to zone bucket
done

FIG. 39

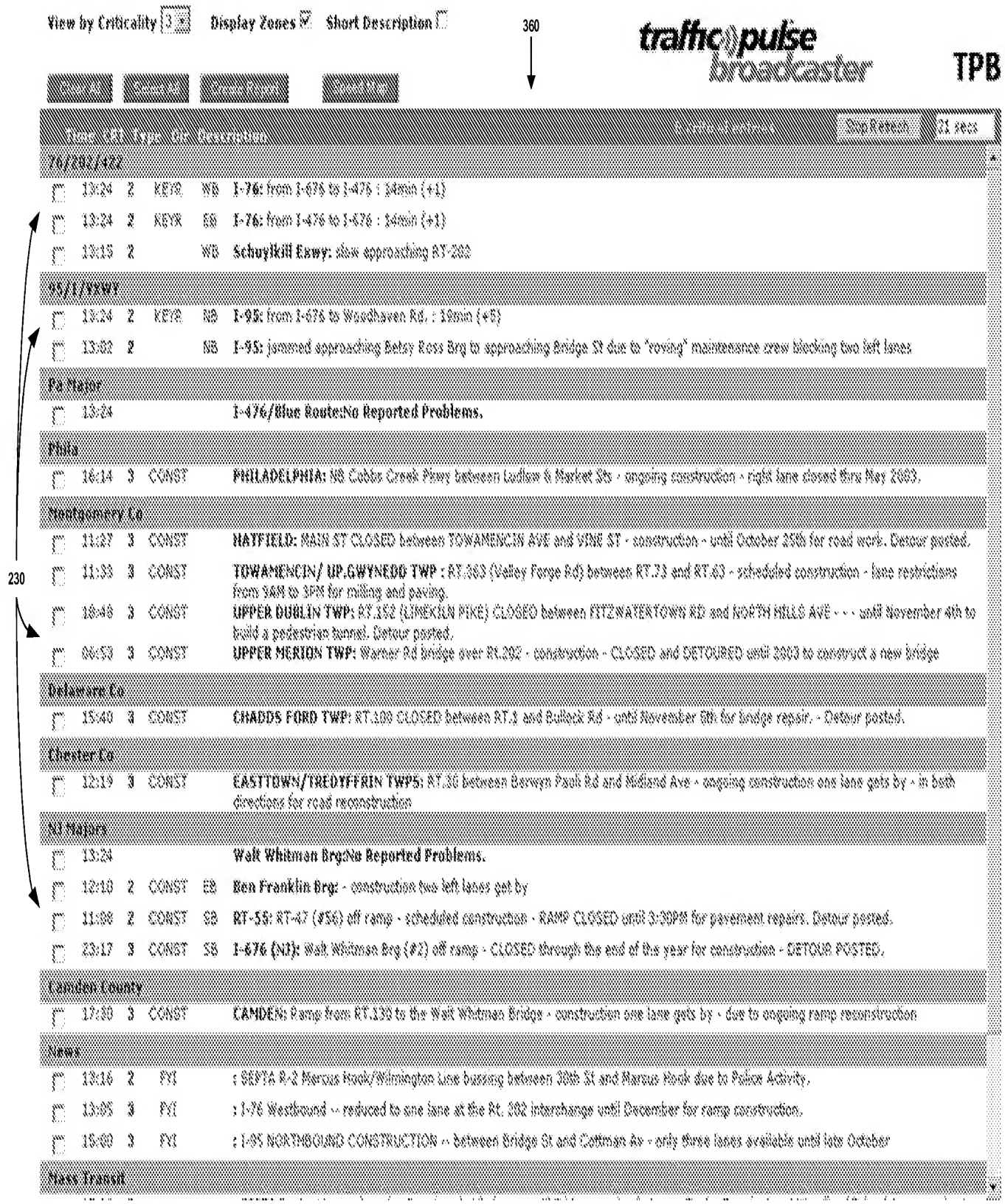

View by Criticality 3
Display Zones
Short Description
360
traffic pulse broadcaster
TPB
Stop Refresh
21 secs
76/202/422
13:24 2 KEYR WB I-76: from I-676 to I-476 : 14min (+1)
13:24 2 KEYR EB I-76: from I-476 to I-676 : 14min (+1)
13:15 2 WB Schuylkill Expwy: slow approaching RT-202
95/I/FXWY
13:24 2 KEYR NB I-95: from I-676 to Woodhaven Rd. : 19min (+8)
13:02 2 NB I-95: jammed approaching Betsy Ross Brg to approaching Bridge St due to "roving" maintenance crew blocking two left lanes
Pa Major
13:24 I-476/Blue Route:No Reported Problems.
Phila
16:14 3 CONST PHILADELPHIA: NB Cobbs Creek Pkwy between Ludlow & Market Sts - ongoing construction - right lane closed thru May 2003.
Montgomery Co
11:47 3 CONST HATFIELD: MAIN ST CLOSED between TOWAMENCIN AVE and VINE ST - construction - until October 25th for road work. Detour posted.
11:33 3 CONST TOWAMENCIN/ UP.GWYNEDD TWP : RT.363 (Valley Forge Rd) between RT.73 and RT.63 - scheduled construction - lane restrictions from 9AM to 3PM for milling and paving.
10:48 3 CONST UPPER DUBLIN TWP: RT.152 (LINEKIN PIKE) CLOSED between FITZWATERTOWN RD and NORTH HILLS AVE - - - until November 4th to build a pedestrian tunnel. Detour posted.
06:53 3 CONST UPPER MERION TWP: Warner Rd bridge over RT.202 - construction - CLOSED and DETOURED until 2003 to construct a new bridge
Delaware Co
15:40 3 CONST CHADDS FORD TWP: RT.100 CLOSED between RT.3 and Bullock Rd - until November 5th for bridge repair. - Detour posted.
Chester Co
12:19 3 CONST EASTTOWN/TREDYFFRIN TWPS: RT.30 between Berwyn Park Rd and Midland Ave - ongoing construction one lane gets by - in both directions for road reconstruction
NJ Majors
13:24 Walt Whitman Brg:No Reported Problems.
12:10 2 CONST EB Ben Franklin Brg: - construction two left lanes get by
11:06 2 CONST SB RT-55: RT-47 (#56) off ramp - scheduled construction - RAMP CLOSED until 3:30PM for pavement repairs. Detour posted.
23:17 3 CONST SB I-676 (NJ): Walt Whitman Brg (#2) off ramp - CLOSED through the end of the year for construction - DETOUR POSTED.
Camden County
17:30 3 CONST CAMDEN: Ramp from RT.130 to the Walt Whitman Bridge - construction one lane gets by - due to ongoing ramp reconstruction
News
13:16 2 FYI : SEPTA R-2 Marcus Hook/Wilmington Line buming between 30th St and Marcus Hook due to Police Activity.
13:05 3 FYI : I-76 Westbound -- reduced to one lane at the Rt. 202 interchange until December for ramp construction.
15:00 3 FYI : I-95 NORTHBOUND CONSTRUCTION -- between Bridge St and Cottman Av - only three lanes available until late October
Mass Transit
230

FIG. 40

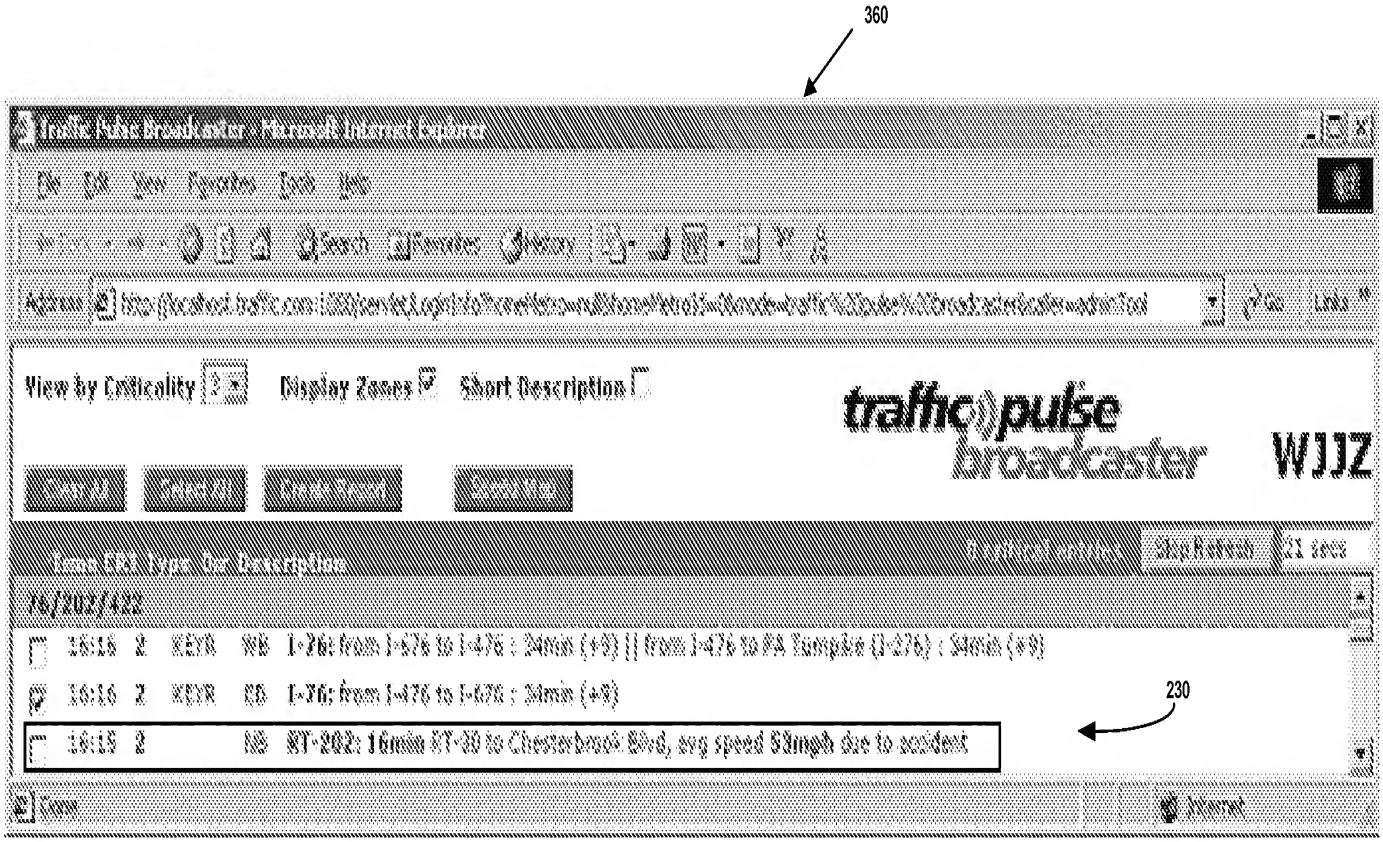
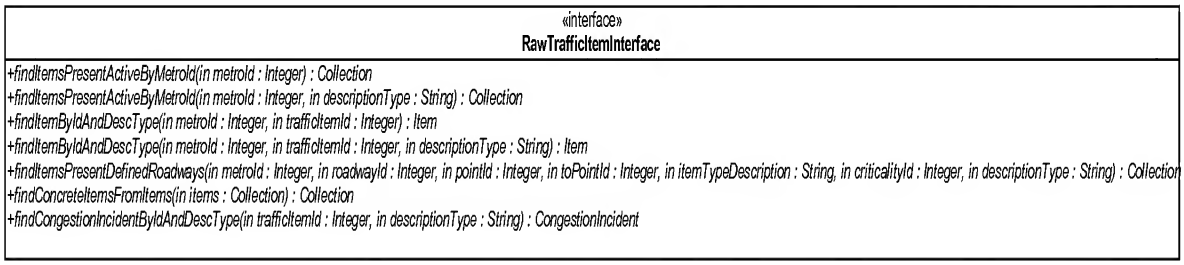
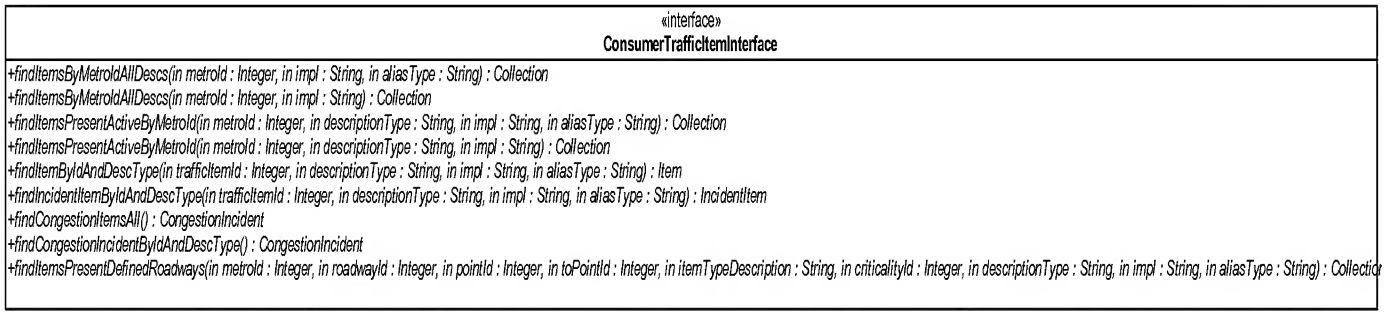

360
View by Criticality
Display Zones
Short Description
traffic pulse
broadcaster
WJJZ
230

FIG. 41


«interface»
RawTrafficItemInterface
+findItemsPresentActiveByMetroId(in metroId : Integer) : Collection
+findItemsPresentActiveByMetroId(in metroId : Integer, in descriptionType : String) : Collection
+findItemByIdAndDescType(in metroId : Integer, in trafficItemId : Integer) : Item
+findItemByIdAndDescType(in metroId : Integer, in trafficItemId : Integer, in descriptionType : String) : Item
+findItemsPresentDefinedRoadways(in metroId : Integer, in roadwayId : Integer, in pointId : Integer, in toPointId : Integer, in itemTypeDescription : String, in criticalityId : Integer, in descriptionType : String) : Collection
+findConcreteItemsFromItems(in items : Collection) : Collection
+findCongestionIncidentByIdAndDescType(in trafficItemId : Integer, in descriptionType : String) : CongestionIncident


«interface»
ConsumerTrafficItemInterface
+findItemsByMetroIdAllDescs(in metroId : Integer, in impl : String, in aliasType : String) : Collection
+findItemsByMetroIdAllDescs(in metroId : Integer, in impl : String) : Collection
+findItemsPresentActiveByMetroId(in metroId : Integer, in descriptionType : String, in impl : String, in aliasType : String) : Collection
+findItemsPresentActiveByMetroId(in metroId : Integer, in descriptionType : String, in impl : String) : Collection
+findItemByIdAndDescType(in trafficItemId : Integer, in descriptionType : String, in impl : String, in aliasType : String) : Item
+findIncidentItemByIdAndDescType(in trafficItemId : Integer, in descriptionType : String, in impl : String, in aliasType : String) : IncidentItem
+findCongestionItemsAll() : CongestionIncident
+findCongestionIncidentByIdAndDescType() : CongestionIncident
+findItemsPresentDefinedRoadways(in metroId : Integer, in roadwayId : Integer, in pointId : Integer, in toPointId : Integer, in itemTypeDescription : String, in criticalityId : Integer, in descriptionType : String, in impl : String, in aliasType : String) : Collectio


«interface»
AnnouncerItemRollupInterface
+getItems(in metroId : Integer, in impl : String) : Collection


«interface»
AnnouncerZoneViewInterface
+findAnnouncerZoneViewByUserId(in userId : Integer, in roleId : Integer, in metroId : Integer) : Collection

FIG. 42

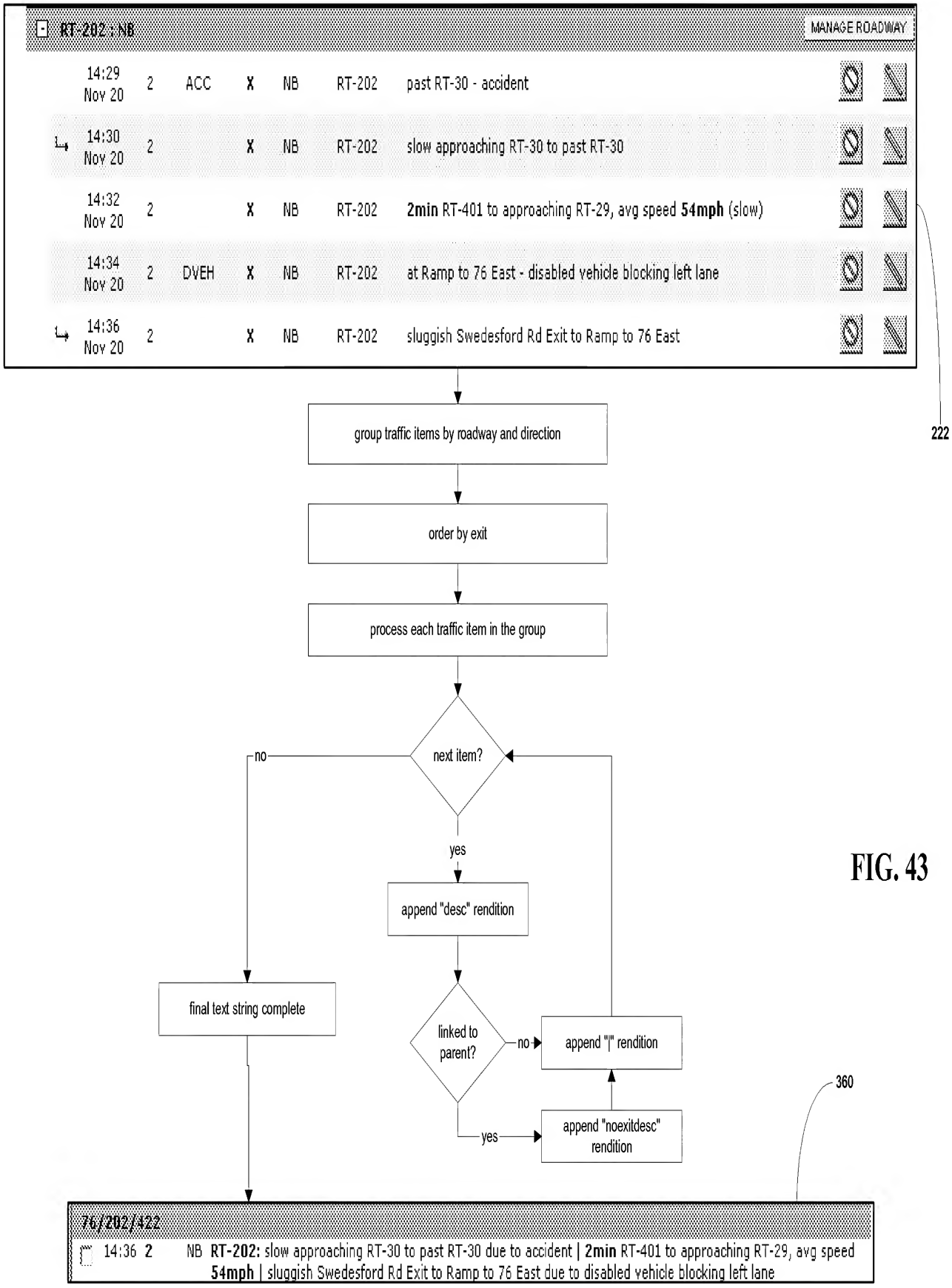

RT-202 : NB
MANAGE ROADWAY
14:29 Nov 20 2 ACC X NB RT-202 past RT-30 - accident
14:30 Nov 20 2 X NB RT-202 slow approaching RT-30 to past RT-30
14:32 Nov 20 2 X NB RT-202 2min RT-401 to approaching RT-29, avg speed 54mph (slow)
14:34 Nov 20 2 DVEH X NB RT-202 at Ramp to 76 East - disabled vehicle blocking left lane
14:36 Nov 20 2 X NB RT-202 sluggish Swedesford Rd Exit to Ramp to 76 East
222
group traffic items by roadway and direction
order by exit
process each traffic item in the group
next item?
no
yes
append "desc" rendition
final text string complete
linked to parent?
no
append "|" rendition
yes
append "noexitdesc" rendition
360
76/202/422
14:36 2 NB RT-202: slow approaching RT-30 to past RT-30 due to accident | 2min RT-401 to approaching RT-29, avg speed 54mph | sluggish Swedesford Rd Exit to Ramp to 76 East due to disabled vehicle blocking left lane

FIG. 43

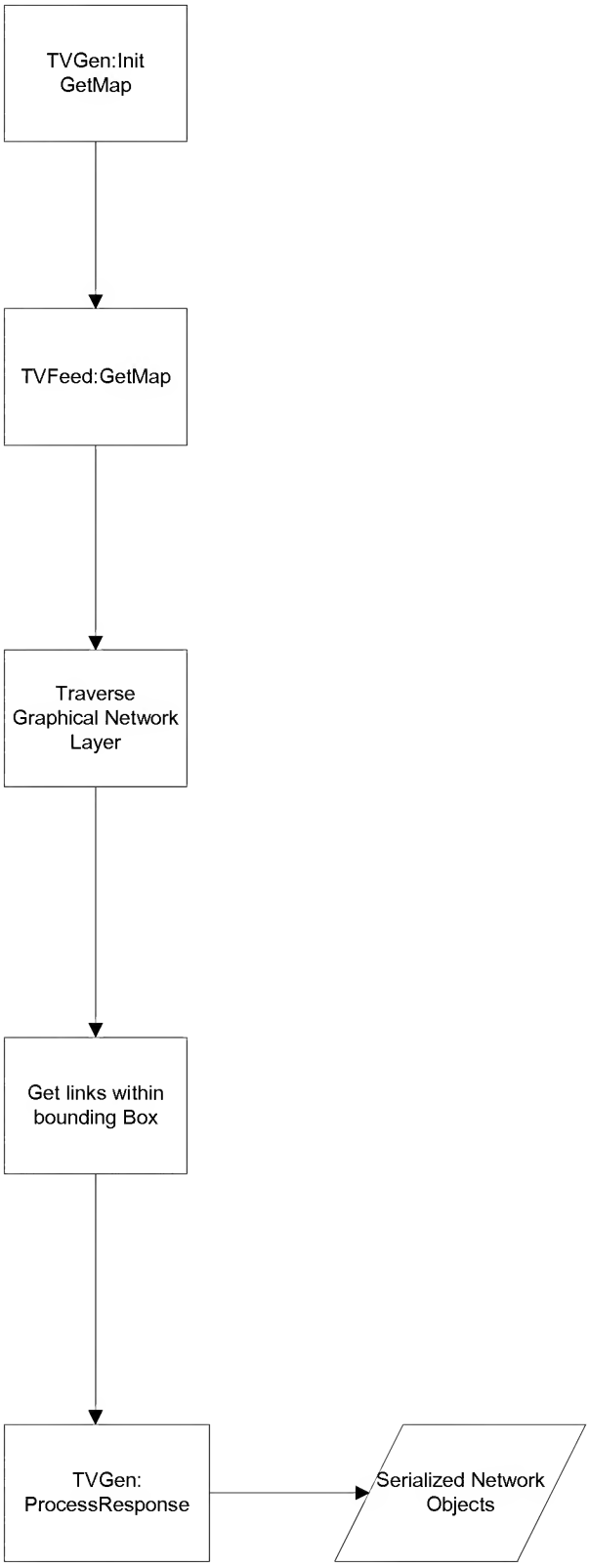

TVGen:Init GetMap
TVFeed:GetMap
Traverse Graphical Network Layer
Get links within bounding Box
TVGen: ProcessResponse
Serialized Network Objects

FIG. 44

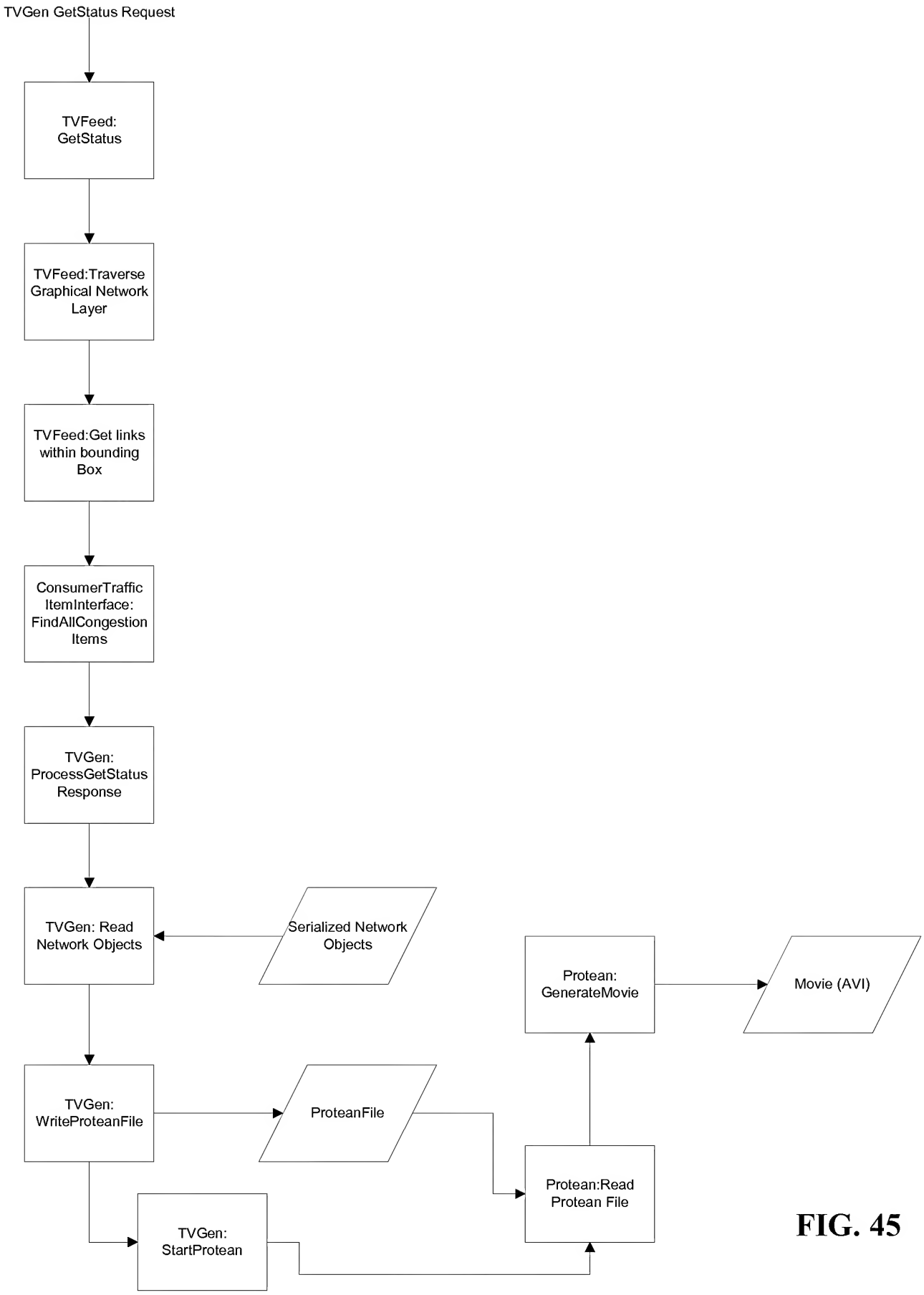

TVGen GetStatus Request
TVFeed: GetStatus
TVFeed:Traverse Graphical Network Layer
TVFeed:Get links within bounding Box
ConsumerTraffic ItemInterface: FindAllCongestion Items
TVGen: ProcessGetStatus Response
TVGen: Read Network Objects
Serialized Network Objects
TVGen: WriteProteanFile
ProteanFile
TVGen: StartProtean
Protean:Read Protean File
Protean: GenerateMovie
Movie (AVI)

FIG. 45

```
<?xml version="1.0" encoding="UTF-8"?>
<GRAPHICAL_NETWORK>
  <TIMESTAMP VALUE="20-Nov-2002 06:11:26 EST"/>
  <ROADWAY ID="212">
    <DESCRIPTION><![CDATA[SR-408]]></DESCRIPTION>
    <DIRECTION VALUE="W">
      <SEGMENTS>
        <SEGMENT ID="GraphicalLink102N04949|down|VisibleCompoundLink(102-04948-&gt;102N04942)|up">
          <RAW_DESCRIPTION><![CDATA[91| 1| 2790121<M>91| 1| 2790091 > GraphicalLink102N04949|down|VisibleCompoundLink(102-04948-
>102N04942)|up > 91| 1| 2790091<M>91| 1| 2784216{versionid=Q42001, tableid=2, rdstmc=[102N04949, 102-04948, 102N04948, 102-04947, 102N04947, 102-
04946, 102N04946, 102-04945, 102N04945, 102-04944, 102N04944, 102-04943, 102N04943, 102-04942, 102N04942], ebucc=1, pid=[1949, 1948, 1947, 1946,
1945, 1944, 1943, 1942], lifeid=[91| 1| 86418, 91| 1| 106005, 91| 1| 86420, 91| 1| 86422, 91| 1| 13477, 91| 1| 13478, 91| 1| 100271, 91| 1| 100270, 91| 1| 86555, 91| 1| 86556,
91| 1| 86557, 91| 1| 13475, 91| 1| 13473, 91| 1| 580267, 91| 1| 580266, 91| 1| 580268, 91| 1| 86570, 91| 1| 13470, 91| 1| 13469, 91| 1| 86662, 91| 1| 580261, 91| 1| 580265,
91| 1| 580260], edgeid=[22398135, 22424476, 22398138, 22398140, 17009629, 17009630, 22415974, 22415973, 22398295, 22398296, 22398298, 17009628,
17009627, 23243703, 23243702, 23243704, 22398316, 17009602, 17009601, 22398423, 23243697, 23243701, 23243696], rdsdir=[-, N],
roadwayDirDetails=[212|W|ACTIVE|SR-408], locationid=[04949, 04948, 04947, 04946, 04945, 04944, 04943, 04942], isramp=N, location=[SR-436/EXIT 14,
HOLLAND EAST MAIN TOLL PLAZA, SR-15/S CONWAY RD/EXIT 13, CRYSTAL LK DR/EXIT 12, BUMBY AVE/EXIT 12, MILLS AVE/EXIT 11, ROSALIND AVE/EXIT
11, DELANEY AVE/EXIT 10|}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102N04949| 102-04948| 102N04948| 102-04947| 102N04947| 102-04946| 102N04946| 102-04945| 102N04945| 102-
04944| 102N04944| 102-04943| 102N04943| 102-04942| 102N04942]]></RDSTMC>
          <LOCATION><![CDATA[SR-436/EXIT 14|HOLLAND EAST MAIN TOLL PLAZA|SR-15/S CONWAY RD/EXIT 13|CRYSTAL LK DR/EXIT 12|BUMBY AVE/
EXIT 12|MILLS AVE/EXIT 11|ROSALIND AVE/EXIT 11|DELANEY AVE/EXIT 10|]]></LOCATION>
          <GEOLOCATION LATITUDE="28.53965" LONGITUDE="-81.31342"/>
          <GEOLOCATION LATITUDE="28.53961" LONGITUDE="-81.31422"/>
          <GEOLOCATION LATITUDE="28.53967" LONGITUDE="-81.3149"/>
          <GEOLOCATION LATITUDE="28.53976" LONGITUDE="-81.3158"/>
          <GEOLOCATION LATITUDE="28.53967" LONGITUDE="-81.31711"/>
          <GEOLOCATION LATITUDE="28.53969" LONGITUDE="-81.31826"/>
          <GEOLOCATION LATITUDE="28.53992" LONGITUDE="-81.31924"/>
          <GEOLOCATION LATITUDE="28.53966" LONGITUDE="-81.32043"/>
          <GEOLOCATION LATITUDE="28.53975" LONGITUDE="-81.32182"/>
          <GEOLOCATION LATITUDE="28.53958" LONGITUDE="-81.32306"/>
          <GEOLOCATION LATITUDE="28.53937" LONGITUDE="-81.32442"/>
          <GEOLOCATION LATITUDE="28.53922" LONGITUDE="-81.32521"/>
          <GEOLOCATION LATITUDE="28.53859" LONGITUDE="-81.3284"/>
          <GEOLOCATION LATITUDE="28.53853" LONGITUDE="-81.32895"/>
          <GEOLOCATION LATITUDE="28.53847" LONGITUDE="-81.32968"/>
          <GEOLOCATION LATITUDE="28.53844" LONGITUDE="-81.33125"/>
          <GEOLOCATION LATITUDE="28.53845" LONGITUDE="-81.33409"/>
          <GEOLOCATION LATITUDE="28.53845" LONGITUDE="-81.33492"/>
          <GEOLOCATION LATITUDE="28.53845" LONGITUDE="-81.33966"/>
          <GEOLOCATION LATITUDE="28.53845" LONGITUDE="-81.34009"/>
          <GEOLOCATION LATITUDE="28.53845" LONGITUDE="-81.34186"/>
          <GEOLOCATION LATITUDE="28.53844" LONGITUDE="-81.34363"/>
          <GEOLOCATION LATITUDE="28.53835" LONGITUDE="-81.34775"/>
        </SEGMENT>
        <SEGMENT ID="GraphicalLinkVisibleCompoundLink(102-04948-&gt;102N04942)|down|102-04941|up">
          <RAW_DESCRIPTION><![CDATA[91| 1| 2790091<M>91| 1| 2784216 > GraphicalLinkVisibleCompoundLink(102-04948->102N04942)|down|102-
04941|up > 91| 1| 2784216<M>91| 1| 2782836{versionid=Q42001, tableid=2, rdstmc=[102-04948, 102N04948, 102-04947, 102N04947, 102-04946, 102N04946,
102-04945, 102N04945, 102-04944, 102N04944, 102-04943, 102N04943, 102-04942, 102N04942, 102-04941], ebucc=1, pid=[1948, 1947, 1946, 1945, 1944,
1943, 1942, 1941], lifeid=[91| 1| 86422, 91| 1| 13477, 91| 1| 13478, 91| 1| 100271, 91| 1| 100270, 91| 1| 86555, 91| 1| 86556, 91| 1| 86557, 91| 1| 13475, 91| 1| 13473,
91| 1| 580267, 91| 1| 580266, 91| 1| 580268, 91| 1| 86570, 91| 1| 13470, 91| 1| 13469, 91| 1| 86662, 91| 1| 580261, 91| 1| 580265, 91| 1| 580260, 91| 1| 13146], edgeid=[22398140,
17009629, 17009630, 22415974, 22415973, 22398295, 22398296, 22398298, 17009628, 17009627, 23243703, 23243702, 23243704, 22398316, 17009602,
17009601, 22398423, 23243697, 23243701, 23243696, 17008472], rdsdir=[-, N], roadwayDirDetails=[212|W|ACTIVE|SR-408], locationid=[04948, 04947, 04946,
04945, 04944, 04943, 04942, 04941], isramp=N, location=[HOLLAND EAST MAIN TOLL PLAZA, SR-15/S CONWAY RD/EXIT 13, CRYSTAL LK DR/EXIT 12,
BUMBY AVE/EXIT 12, MILLS AVE/EXIT 11, ROSALIND AVE/EXIT 11, DELANEY AVE/EXIT 10, I-4/EXIT 10|}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102-04948| 102N04948| 102-04947| 102N04947| 102-04946| 102N04946| 102-04945| 102N04945| 102-04944| 102N04944| 102-
04943| 102N04943| 102-04942| 102N04942| 102-04941]]></RDSTMC>
          <LOCATION><![CDATA[HOLLAND EAST MAIN TOLL PLAZA|SR-15/S CONWAY RD/EXIT 13|CRYSTAL LK DR/EXIT 12|BUMBY AVE/EXIT 12|MILLS
AVE/EXIT 11|ROSALIND AVE/EXIT 11|DELANEY AVE/EXIT 10|I-4/EXIT 10|]]></LOCATION>
          <GEOLOCATION LATITUDE="28.53835" LONGITUDE="-81.34775"/>
          <GEOLOCATION LATITUDE="28.53828" LONGITUDE="-81.35187"/>
          <GEOLOCATION LATITUDE="28.53827" LONGITUDE="-81.35597"/>
          <GEOLOCATION LATITUDE="28.53828" LONGITUDE="-81.35851"/>
          <GEOLOCATION LATITUDE="28.53824" LONGITUDE="-81.35924"/>
          <GEOLOCATION LATITUDE="28.53816" LONGITUDE="-81.35985"/>
          <GEOLOCATION LATITUDE="28.53798" LONGITUDE="-81.36075"/>
          <GEOLOCATION LATITUDE="28.53789" LONGITUDE="-81.36125"/>
          <GEOLOCATION LATITUDE="28.53751" LONGITUDE="-81.36296"/>
          <GEOLOCATION LATITUDE="28.5374" LONGITUDE="-81.36363"/>
          <GEOLOCATION LATITUDE="28.53734" LONGITUDE="-81.36421"/>
          <GEOLOCATION LATITUDE="28.53725" LONGITUDE="-81.36832"/>
          <GEOLOCATION LATITUDE="28.53725" LONGITUDE="-81.37151"/>
          <GEOLOCATION LATITUDE="28.53725" LONGITUDE="-81.37288"/>
          <GEOLOCATION LATITUDE="28.53719" LONGITUDE="-81.37354"/>
          <GEOLOCATION LATITUDE="28.53697" LONGITUDE="-81.37465"/>
          <GEOLOCATION LATITUDE="28.53688" LONGITUDE="-81.37502"/>
          <GEOLOCATION LATITUDE="28.53664" LONGITUDE="-81.37578"/>
          <GEOLOCATION LATITUDE="28.53624" LONGITUDE="-81.377"/>
          <GEOLOCATION LATITUDE="28.53613" LONGITUDE="-81.37732"/>
          <GEOLOCATION LATITUDE="28.53603" LONGITUDE="-81.37767"/>
          <GEOLOCATION LATITUDE="28.53587" LONGITUDE="-81.37817"/>
          <GEOLOCATION LATITUDE="28.5356" LONGITUDE="-81.37912"/>
        </SEGMENT>

      </SEGMENTS>
    </DIRECTION>
      </SEGMENTS>
    </DIRECTION>
  </ROADWAY>
</GRAPHICAL_NETWORK>
```


FIG. 46

```
<?xml version="1.0" encoding="UTF-8"?>
<GRAPHICAL_NETWORK_STATUS>
  <TIMESTAMP VALUE="29-Oct-2002 05:35:16 EST"/>
  <ROADWAY ID="212">
    <DESCRIPTION><![CDATA[SR-408]]></DESCRIPTION>
    <DIRECTION VALUE="W">
      <SEGMENTS/>
    </DIRECTION>
    <DESCRIPTION><![CDATA[SR-408]]></DESCRIPTION>
    <DIRECTION VALUE="E">
      <SEGMENTS>
        <SEGMENT ID="GraphicalLink:VisibleCompoundLink:(102P04941|up--&gt;102P04941|down)|down|VisibleCompoundLink:(102+04942--
&gt;102P04948)|up">
          <RAW_DESCRIPTION><![CDATA[212|E|91|1|2782206<M>212|E|91|1|2782246 > GraphicalLink:VisibleCompoundLink:(102P04941|up--
>102P04941|down)|down|VisibleCompoundLink:(102+04942-->102P04948)|up > 212|E|91|1|2782246<M>212|E|91|1|2789011{baseroadwayid=212,
location=Ramp to I-4 West, rdsdir=[P, P], rdstmc=102P04941, direction=E, roadname=SR-408}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102P04941]]></RDSTMC>
          <LOCATION><![CDATA[Ramp to I-4 West]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[yellow]]></CONGESTION_STATUS>
        </SEGMENT>
      </SEGMENTS>
    </DIRECTION>
  </ROADWAY>
  <ROADWAY ID="211">
    <DESCRIPTION><![CDATA[I-4]]></DESCRIPTION>
    <DIRECTION VALUE="W">
      <SEGMENTS>
        <SEGMENT ID="GraphicalLink:102N04802|down|VisibleCompoundLink:(102-04801--&gt;102N04798)|up">
          <RAW_DESCRIPTION><![CDATA[211|W|91|1|2851691<M>211|W|91|1|2845906 >
GraphicalLink:102N04802|down|VisibleCompoundLink:(102-04801-->102N04798)|up >
211|W|91|1|2845906<M>211|W|91|1|2794906{baseroadwayid=211, location=PRINCETON ST/EXIT 43, rdsdir=N, rdstmc=102N04802, direction=W,
roadname=I-4}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102N04802]]></RDSTMC>
          <LOCATION><![CDATA[PRINCETON ST/EXIT 43]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[red]]></CONGESTION_STATUS>
        </SEGMENT>
        <SEGMENT ID="GraphicalLink:VisibleCompoundLink:(102-04801--&gt;102N04798)|down|102-04797|up">
          <RAW_DESCRIPTION><![CDATA[211|W|91|1|2845906<M>211|W|91|1|2794906 > GraphicalLink:VisibleCompoundLink:(102-04801--
>102N04798)|down|102-04797|up > 211|W|91|1|2794906<M>211|W|91|1|2793686{baseroadwayid=211, location=US-17/US-92/IVANHOE BLVD/
EXIT 4, rdsdir=[-, N, -, N, -, N, -, N], rdstmc=102-04801, direction=W, roadname=I-4}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102-04801]]></RDSTMC>
          <LOCATION><![CDATA[US-17/US-92/IVANHOE BLVD/EXIT 4]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[red]]></CONGESTION_STATUS>
        </SEGMENT>
        <SEGMENT ID="GraphicalLink:102-04797|down|102N04797|up">
          <RAW_DESCRIPTION><![CDATA[211|W|91|1|2794906<M>211|W|91|1|2793686 > GraphicalLink:102-04797|down|102N04797|up >
211|W|91|1|2793686<M>211|W|91|1|2785326{baseroadwayid=211, location=SOUTH ST/EXIT 39, rdsdir=-, rdstmc=102-04797, direction=W,
roadname=I-4}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102-04797]]></RDSTMC>
          <LOCATION><![CDATA[SOUTH ST/EXIT 39]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[red]]></CONGESTION_STATUS>
        </SEGMENT>
        <SEGMENT ID="GraphicalLink:102N04797|down|VisibleCompoundLink:(102-04796--&gt;102N04791)|up">
          <RAW_DESCRIPTION><![CDATA[211|W|91|1|2793686<M>211|W|91|1|2785326 >
GraphicalLink:102N04797|down|VisibleCompoundLink:(102-04796-->102N04791)|up >
211|W|91|1|2785326<M>211|W|91|1|2748181{baseroadwayid=211, location=SOUTH ST/EXIT 39, rdsdir=N, rdstmc=102N04797, direction=W,
roadname=I-4}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102N04797]]></RDSTMC>
          <LOCATION><![CDATA[SOUTH ST/EXIT 39]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[red]]></CONGESTION_STATUS>
        </SEGMENT>
      </SEGMENTS>
    </DIRECTION>
    <DESCRIPTION><![CDATA[I-4]]></DESCRIPTION>
    <DIRECTION VALUE="E">
      <SEGMENTS>
        <SEGMENT ID="GraphicalLink:102P04790|down|VisibleCompoundLink:(102+04791|up--&gt;102P04796)|up">
          <RAW_DESCRIPTION><![CDATA[211|E|91|1|2743781<M>211|E|91|1|2746826 >
GraphicalLink:102P04790|down|VisibleCompoundLink:(102+04791|up-->102P04796)|up >
211|E|91|1|2746826<M>211|E|91|1|2784896{baseroadwayid=211, location=SR-423/JOHN YOUNG PKY/EXIT 32, rdsdir=P, rdstmc=102P04790,
direction=E, roadname=I-4}]]></RAW_DESCRIPTION>
          <RDSTMC><![CDATA[102P04790]]></RDSTMC>
          <LOCATION><![CDATA[SR-423/JOHN YOUNG PKY/EXIT 32]]></LOCATION>
          <CONGESTION_STATUS><![CDATA[red]]></CONGESTION_STATUS>
        </SEGMENT>
      </SEGMENTS>
    </DIRECTION>
  </ROADWAY>
</GRAPHICAL_NETWORK_STATUS>
```

373

376

379

FIG. 47


370
INSTANT TRAFFIC
traffic pulse
17
92
John Young Pkwy
380
4
E. Colonial Drive
TOLL
408
DBT
374
377

FIG. 48

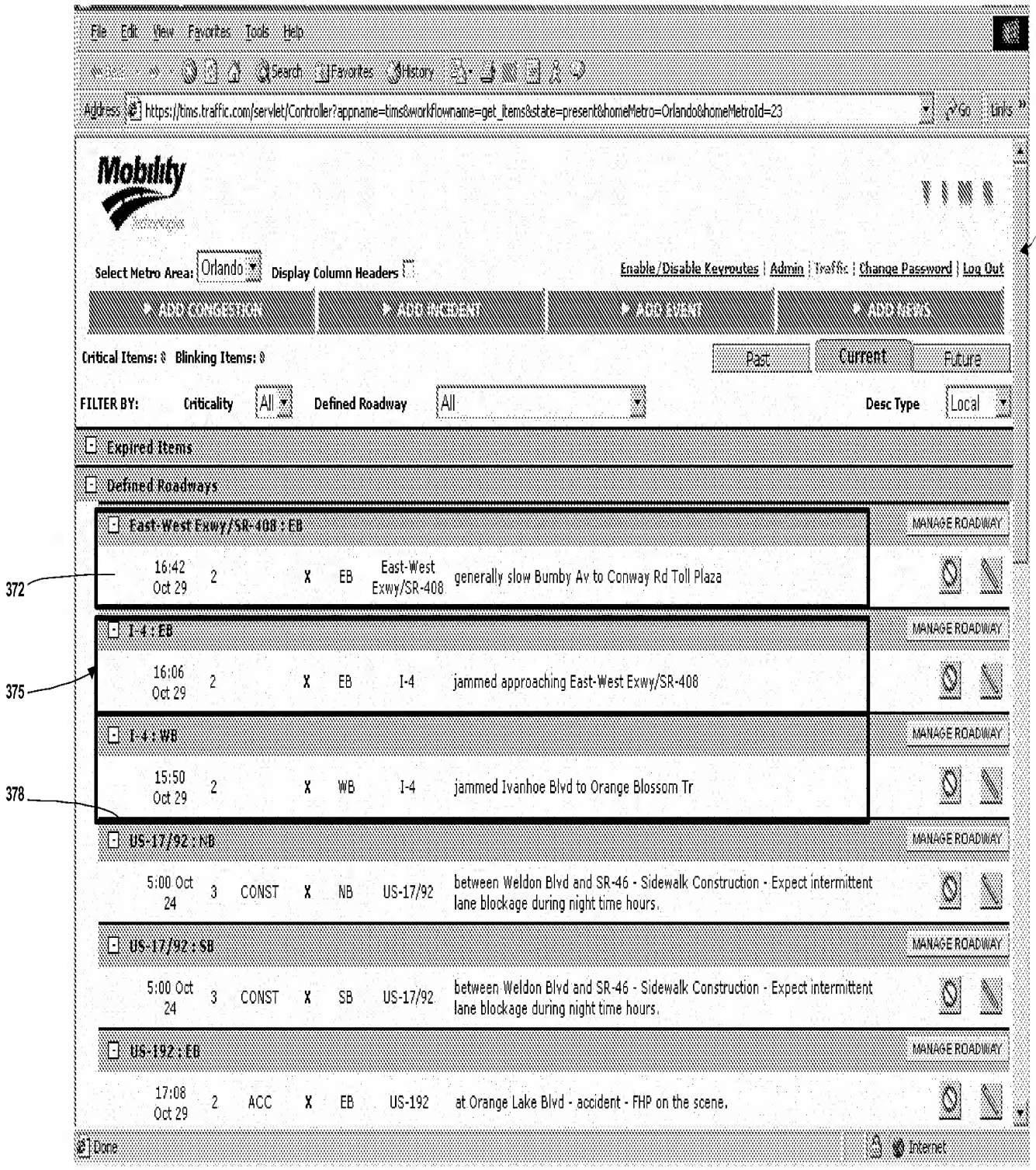

222
372
375
378
Mobility
Select Metro Area: Orlando
Display Column Headers
Enable/Disable Keyroutes | Admin | Traffic | Change Password | Log Out
ADD CONGESTION
ADD INCIDENT
ADD EVENT
ADD NEWS
Critical Items: 8 Blinking Items: 8
Past
Current
Future
FILTER BY: Criticality All Defined Roadway All Desc Type Local
Expired Items
Defined Roadways
East-West Exwy/SR-408 : EB
MANAGE ROADWAY
16:42 Oct 29 2 X EB East-West Exwy/SR-408 generally slow Bumby Av to Conway Rd Toll Plaza
I-4 : EB
MANAGE ROADWAY
16:06 Oct 29 2 X EB I-4 jammed approaching East-West Exwy/SR-408
I-4 : WB
MANAGE ROADWAY
15:50 Oct 29 2 X WB I-4 jammed Ivanhoe Blvd to Orange Blossom Tr
US-17/92 : NB
MANAGE ROADWAY
5:00 Oct 24 3 CONST X NB US-17/92 between Weldon Blvd and SR-46 - Sidewalk Construction - Expect intermittent lane blockage during night time hours.
US-17/92 : SB
MANAGE ROADWAY
5:00 Oct 24 3 CONST X SB US-17/92 between Weldon Blvd and SR-46 - Sidewalk Construction - Expect intermittent lane blockage during night time hours.
US-192 : EB
MANAGE ROADWAY
17:08 Oct 29 2 ACC X EB US-192 at Orange Lake Blvd - accident - FHP on the scene.
Done
Internet

FIG. 49

TIME = $T_0$

| Roadway 1000 | Sensor 1001 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 57 | 40 | 6 | 13 | |
| 2 | NorthBound | 53 | 35 | 3 | 17 | |
| 3 | NorthBound | 55 | 38 | 7 | 10 | 55 |
| 4 | SouthBound | 60 | 25 | 7 | 9 | |
| 5 | SouthBound | 63 | 36 | 8 | 7 | |
| 6 | SouthBound | 61 | 30 | 4 | 10 | 61 |

| Roadway 1000 | Sensor 1002 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 56 | 38 | 5 | 14 | |
| 2 | NorthBound | 55 | 40 | 4 | 16 | |
| 3 | NorthBound | 52 | 41 | 5 | 11 | 54 |
| 4 | SouthBound | 62 | 27 | 7 | 10 | |
| 5 | SouthBound | 60 | 34 | 8 | 8 | |
| 6 | SouthBound | 59 | 32 | 4 | 12 | 60 |

| Roadway 1000 | Sensor 1003 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 55 | 42 | 7 | 15 | |
| 2 | NorthBound | 50 | 37 | 2 | 12 | |
| 3 | NorthBound | 52 | 35 | 5 | 14 | 52 |
| 4 | SouthBound | 59 | 22 | 3 | 10 | |
| 5 | SouthBound | 61 | 32 | 4 | 6 | |
| 6 | SouthBound | 63 | 34 | 5 | 9 | 61 |

| Roadway 1000 | Sensor 1004 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 51 | 36 | 3 | 16 | |
| 2 | NorthBound | 55 | 40 | 5 | 13 | |
| 3 | NorthBound | 56 | 39 | 4 | 12 | 54 |
| 4 | SouthBound | 62 | 22 | 3 | 8 | |
| 5 | SouthBound | 59 | 30 | 6 | 11 | |
| 6 | SouthBound | 65 | 29 | 5 | 9 | 62 |

| Roadway 1000 | Sensor 1005 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 55 | 37 | 5 | 12 | |
| 2 | NorthBound | 56 | 39 | 3 | 16 | |
| 3 | NorthBound | 51 | 40 | 7 | 10 | 54 |
| 4 | SouthBound | 62 | 25 | 7 | 9 | |
| 5 | SouthBound | 58 | 31 | 8 | 8 | |
| 6 | SouthBound | 59 | 32 | 4 | 10 | 60 |

FIG. 50

TIME = $T_0$

| Roadway 2000 | Sensor 2010 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 53 | 35 | 5 | 15 | |
| 2 | NorthBound | 50 | 39 | 3 | 12 | |
| 3 | NorthBound | 56 | 38 | 4 | 16 | 53 |
| 4 | SouthBound | 58 | 21 | 5 | 9 | |
| 5 | SouthBound | 61 | 28 | 6 | 10 | |
| 6 | SouthBound | 62 | 30 | 5 | 7 | 60 |

| Roadway 2000 | Sensor 2011 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 55 | 33 | 3 | 14 | |
| 2 | NorthBound | 58 | 36 | 5 | 15 | |
| 3 | NorthBound | 52 | 40 | 6 | 12 | 55 |
| 4 | SouthBound | 59 | 25 | 6 | 10 | |
| 5 | SouthBound | 58 | 29 | 8 | 8 | |
| 6 | SouthBound | 61 | 30 | 5 | 9 | 59 |

FIG. 51

TIME = $T_0$

| Link | Avg Speed (MPH) | Length | Travel Time (min) | Comments |
|---|---|---|---|---|
| 100 | 55.0 | 0.7 | 0.7636 | |
| 101 | 54.3 | 0.34 | 0.3755 | |
| 102 | 53.2 | 0.73 | 0.8238 | assumed equal weighting to each sensor |
| 103 | 54.0 | 0.51 | 0.5667 | |
| 104 | 54.0 | 0.24 | 0.2667 | |
| 105 | 54.0 | 0.14 | 0.1556 | |
| 110 | 55.0 | 0.8 | 0.8727 | |
| 111 | 55.0 | 0.34 | 0.3709 | |
| 112 | 55.0 | 0.73 | 0.7964 | |
| 113 | 55.0 | 0.47 | 0.5127 | |
| 114 | 55.0 | 0.25 | 0.2727 | |
| 115 | 55.0 | 0.16 | 0.1745 | |
| 201 | 53.0 | 2.19 | 2.4792 | |
| 202 | 53.7 | 0.08 | 0.0893 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 203 | 55.0 | 0.42 | 0.4582 | assume negligible effect from sensor 2010 |
| 204 | 55.0 | 0.81 | 0.8836 | |
| 205 | 55.0 | 0.59 | 0.6436 | |
| 210 | 55.0 | 2.27 | 2.4764 | |
| 211 | 55.0 | 0.08 | 0.0873 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 212 | 55.0 | 0.34 | 0.3709 | assume negligible effect from sensor 2010 |
| 213 | 55.0 | 0.73 | 0.7964 | |
| 214 | 55.0 | 0.65 | 0.7091 | |

FIG. 52

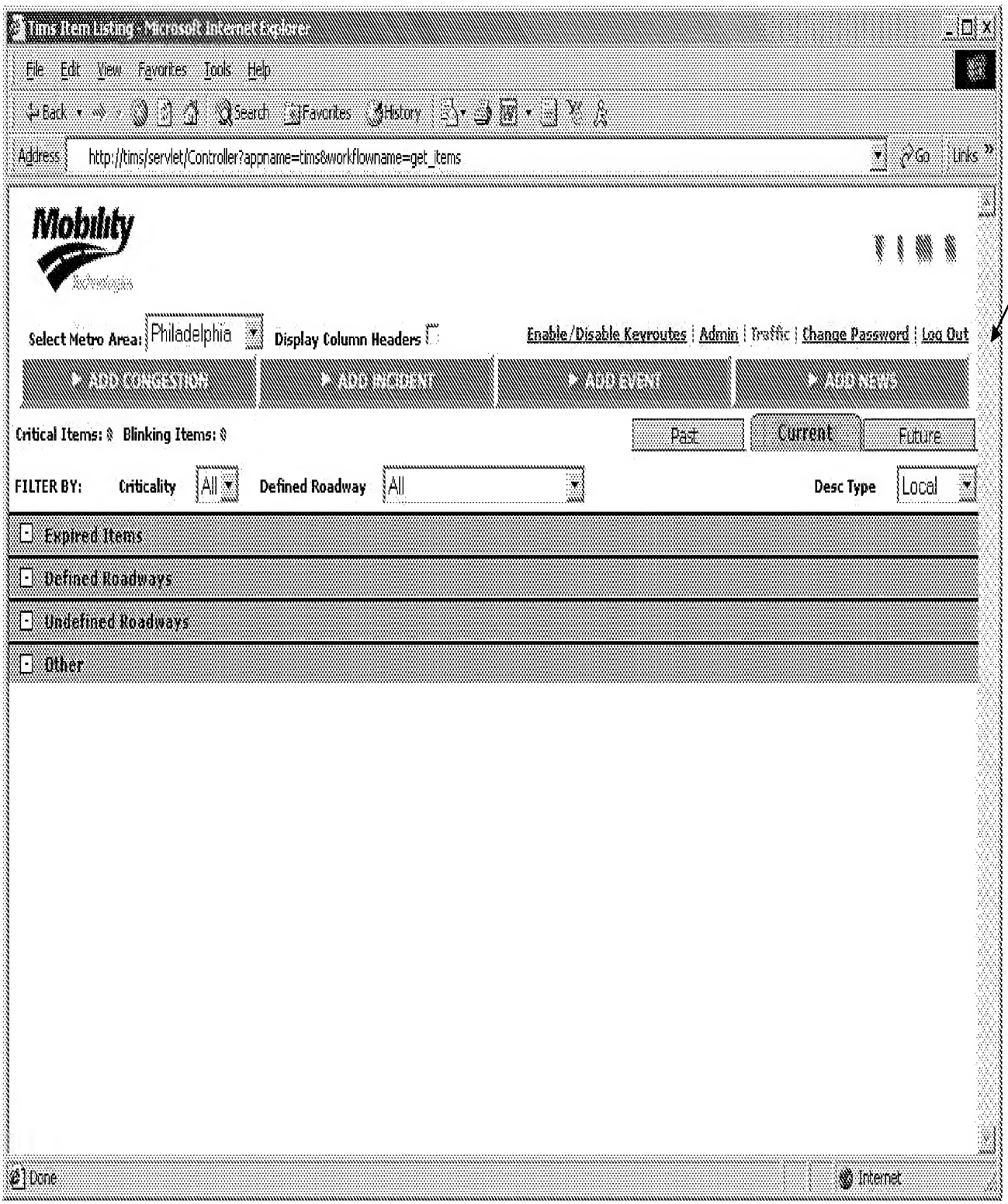

Tims Item Listing - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tims/servlet/Controller?appname=tims&workflowname=get_items
Go Links
Mobility
Select Metro Area: Philadelphia
Display Column Headers
Enable/Disable Keyroutes | Admin | Traffic | Change Password | Log Out
ADD CONGESTION
ADD INCIDENT
ADD EVENT
ADD NEWS
Critical Items: 0 Blinking Items: 0
Past
Current
Future
FILTER BY:
Criticality
All
Defined Roadway
All
Desc Type
Local
Expired Items
Defined Roadways
Undefined Roadways
Other
Done
Internet
222

FIG. 53

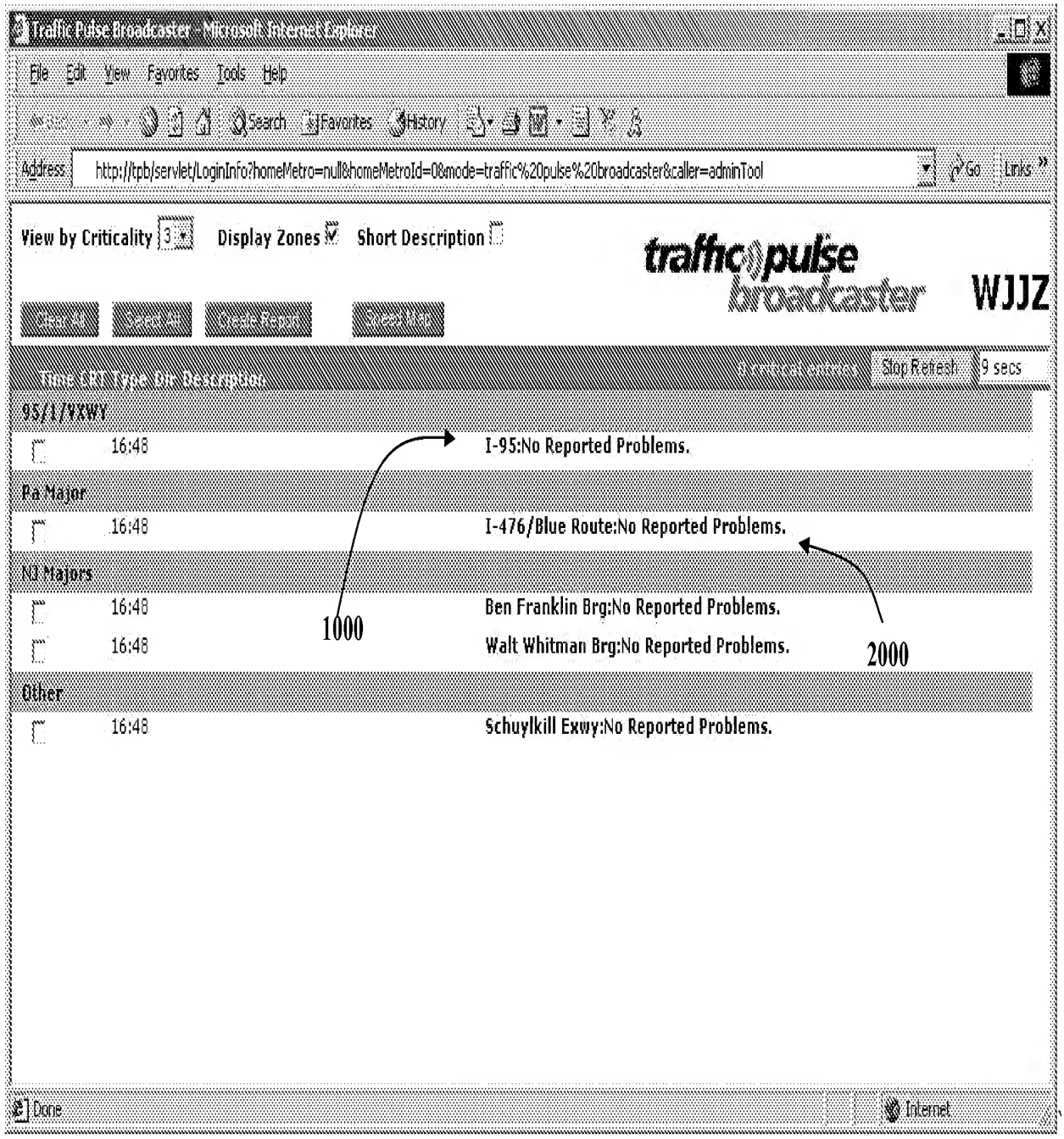

Traffic Pulse Broadcaster - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Search Favorites History
Address http://tpb/servlet/LoginInfo?homeMetro=null&homeMetroId=0&mode=traffic%20pulse%20broadcaster&caller=adminTool
Go Links
View by Criticality 3
Display Zones
Short Description
traffic pulse broadcaster
WJJZ
Clear All
Select All
Create Report
Stop Refresh
9 secs
Time | RT Type Or Description
95/1/YXWY
16:48 I-95:No Reported Problems.
Pa Major
16:48 I-476/Blue Route:No Reported Problems.
NJ Majors
16:48 Ben Franklin Brg:No Reported Problems.
16:48 Walt Whitman Brg:No Reported Problems.
Other
16:48 Schuylkill Exwy:No Reported Problems.
Done
Internet
1000
2000
360

FIG. 54

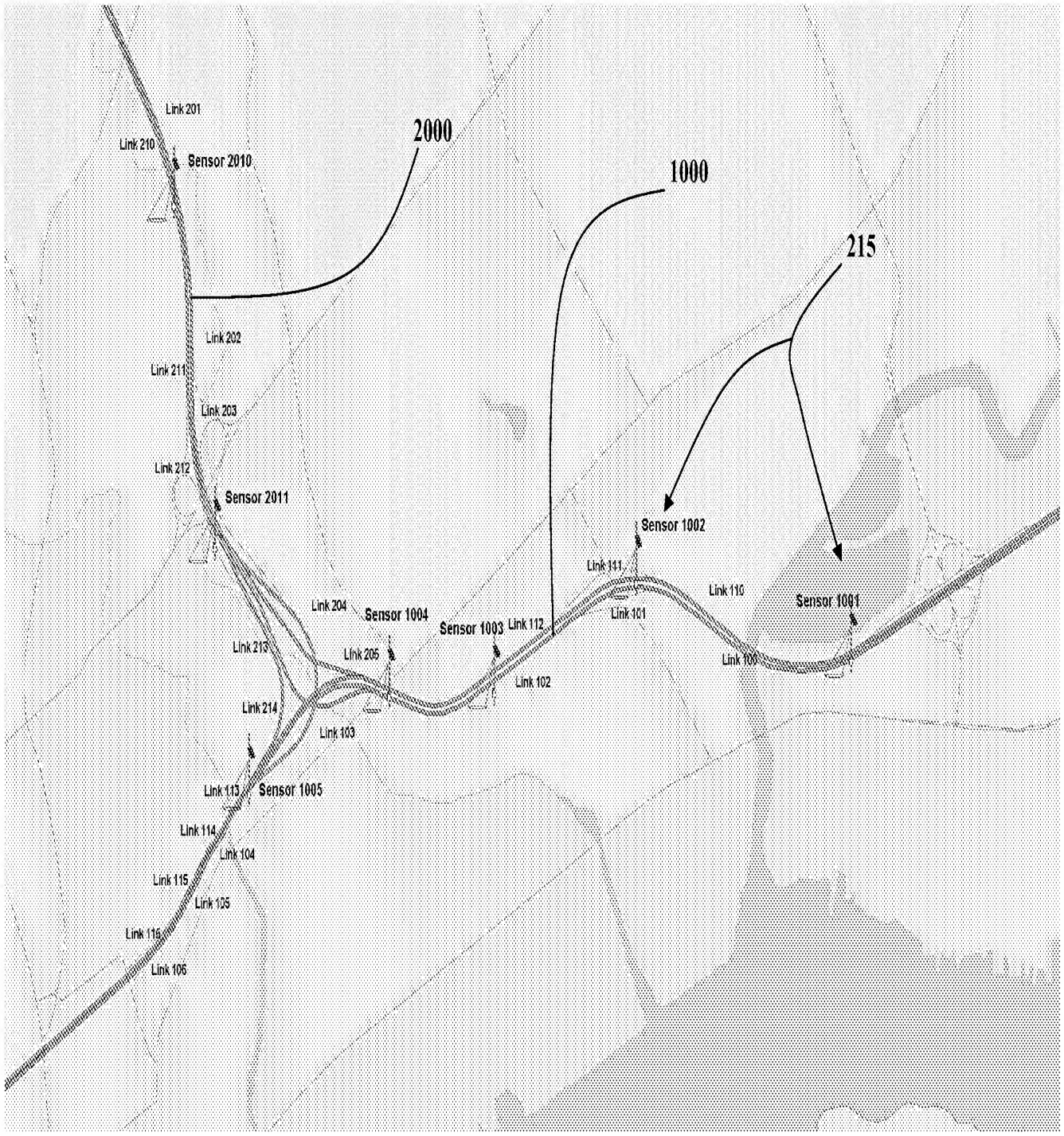

2000
1000
215
Link 201
Link 210
Sensor 2010
Link 202
Link 211
Link 203
Link 212
Sensor 2011
Sensor 1002
Link 111
Link 110
Sensor 1001
Link 204
Sensor 1004
Sensor 1003
Link 112
Link 101
Link 213
Link 205
Link 100
Link 102
Link 214
Link 103
Link 113
Sensor 1005
Link 114
Link 104
Link 115
Link 105
Link 116
Link 106

FIG. 55

TIME = $T_1$

| Roadway 1000 | Sensor 1001 | | | | | |
|---|---|---|---|---|---|---|
| **Lane** | **Direction** | **Speed** | **Volume** | **Long Volume** | **Density** | **Smoothed Speed (per Dir)** |
| 1 | NorthBound | 57 | 40 | 6 | 13 | |
| 2 | NorthBound | 53 | 35 | 3 | 17 | |
| 3 | NorthBound | 55 | 38 | 7 | 10 | 55 |
| 4 | SouthBound | 60 | 25 | 7 | 9 | |
| 5 | SouthBound | 63 | 36 | 8 | 7 | |
| 6 | SouthBound | 61 | 30 | 4 | 10 | 61 |

| Roadway 1000 | Sensor 1002 | | | | | |
|---|---|---|---|---|---|---|
| **Lane** | **Direction** | **Speed** | **Volume** | **Long Volume** | **Density** | **Smoothed Speed (per Dir)** |
| 1 | NorthBound | 56 | 25 | 5 | 9 | |
| 2 | NorthBound | 55 | 28 | 4 | 10 | |
| 3 | NorthBound | 52 | 29 | 5 | 11 | 54 |
| 4 | SouthBound | 50 | 27 | 7 | 15 | |
| 5 | SouthBound | 49 | 34 | 8 | 16 | |
| 6 | SouthBound | 48 | 32 | 4 | 12 | 49 |

| Roadway 1000 | Sensor 1003 | | | | | |
|---|---|---|---|---|---|---|
| **Lane** | **Direction** | **Speed** | **Volume** | **Long Volume** | **Density** | **Smoothed Speed (per Dir)** |
| 1 | NorthBound | 19 | 25 | 7 | 28 | |
| 2 | NorthBound | 33 | 29 | 2 | 31 | |
| 3 | NorthBound | 31 | 28 | 5 | 33 | 31 |
| 4 | SouthBound | 59 | 22 | 3 | 10 | |
| 5 | SouthBound | 61 | 32 | 4 | 6 | |
| 6 | SouthBound | 63 | 34 | 5 | 9 | 61 |

| Roadway 1000 | Sensor 1004 | | | | | |
|---|---|---|---|---|---|---|
| **Lane** | **Direction** | **Speed** | **Volume** | **Long Volume** | **Density** | **Smoothed Speed (per Dir)** |
| 1 | NorthBound | 51 | 36 | 3 | 16 | |
| 2 | NorthBound | 55 | 40 | 5 | 13 | |
| 3 | NorthBound | 56 | 39 | 4 | 12 | 54 |
| 4 | SouthBound | 62 | 22 | 3 | 8 | |
| 5 | SouthBound | 59 | 30 | 6 | 11 | |
| 6 | SouthBound | 65 | 29 | 5 | 9 | 62 |

| Roadway 1000 | Sensor 1005 | | | | | |
|---|---|---|---|---|---|---|
| **Lane** | **Direction** | **Speed** | **Volume** | **Long Volume** | **Density** | **Smoothed Speed (per Dir)** |
| 1 | NorthBound | 55 | 37 | 5 | 12 | |
| 2 | NorthBound | 56 | 39 | 3 | 16 | |
| 3 | NorthBound | 51 | 40 | 7 | 10 | 54 |
| 4 | SouthBound | 62 | 25 | 7 | 9 | |
| 5 | SouthBound | 58 | 31 | 8 | 8 | |
| 6 | SouthBound | 59 | 32 | 4 | 10 | 60 |

**FIG. 56**

TIME = $T_1$

| Roadway 2000 | Sensor 2010 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 55 | 37 | 6 | 16 | |
| 2 | NorthBound | 51 | 39 | 2 | 12 | |
| 3 | NorthBound | 54 | 34 | 3 | 13 | 53 |
| 4 | SouthBound | 59 | 21 | 5 | 7 | |
| 5 | SouthBound | 60 | 25 | 4 | 9 | |
| 6 | SouthBound | 63 | 30 | 3 | 11 | 61 |

| Roadway 2000 | Sensor 2011 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 53 | 35 | 6 | 17 | |
| 2 | NorthBound | 56 | 31 | 2 | 15 | |
| 3 | NorthBound | 53 | 39 | 5 | 13 | 54 |
| 4 | SouthBound | 62 | 24 | 2 | 8 | |
| 5 | SouthBound | 59 | 28 | 7 | 7 | |
| 6 | SouthBound | 61 | 31 | 4 | 9 | 61 |

FIG. 57

TIME = $T_1$

| Link | Avg Speed (MPH) | Length | Travel Time (min) | Comments |
|---|---|---|---|---|
| 100 | 55.0 | 0.7 | 0.7636 | |
| 101 | 54.3 | 0.34 | 0.3755 | |
| 102 | 37.5 | 0.73 | 1.1680 | assumed equal weighting to each sensor |
| 103 | 54.0 | 0.51 | 0.5667 | |
| 104 | 54.0 | 0.24 | 0.2667 | |
| 105 | 54.0 | 0.14 | 0.1556 | |
| 110 | 55.0 | 0.8 | 0.8727 | |
| 111 | 49.0 | 0.34 | 0.4163 | |
| 112 | 55.0 | 0.73 | 0.7964 | |
| 113 | 55.0 | 0.47 | 0.5127 | |
| 114 | 55.0 | 0.25 | 0.2727 | |
| 115 | 55.0 | 0.16 | 0.1745 | |
| 201 | 53.3 | 2.19 | 2.4638 | |
| 202 | 53.6 | 0.08 | 0.0896 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 203 | 54.0 | 0.42 | 0.4667 | assume negligible effect from sensor 2010 |
| 204 | 53.0 | 0.81 | 0.9170 | |
| 205 | 54.5 | 0.59 | 0.6495 | |
| 210 | 55.0 | 2.27 | 2.4764 | |
| 211 | 55.0 | 0.08 | 0.0873 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 212 | 55.0 | 0.34 | 0.3709 | assume negligible effect from sensor 2010 |
| 213 | 55.0 | 0.73 | 0.7964 | |
| 214 | 55.0 | 0.65 | 0.7091 | |

FIG. 58

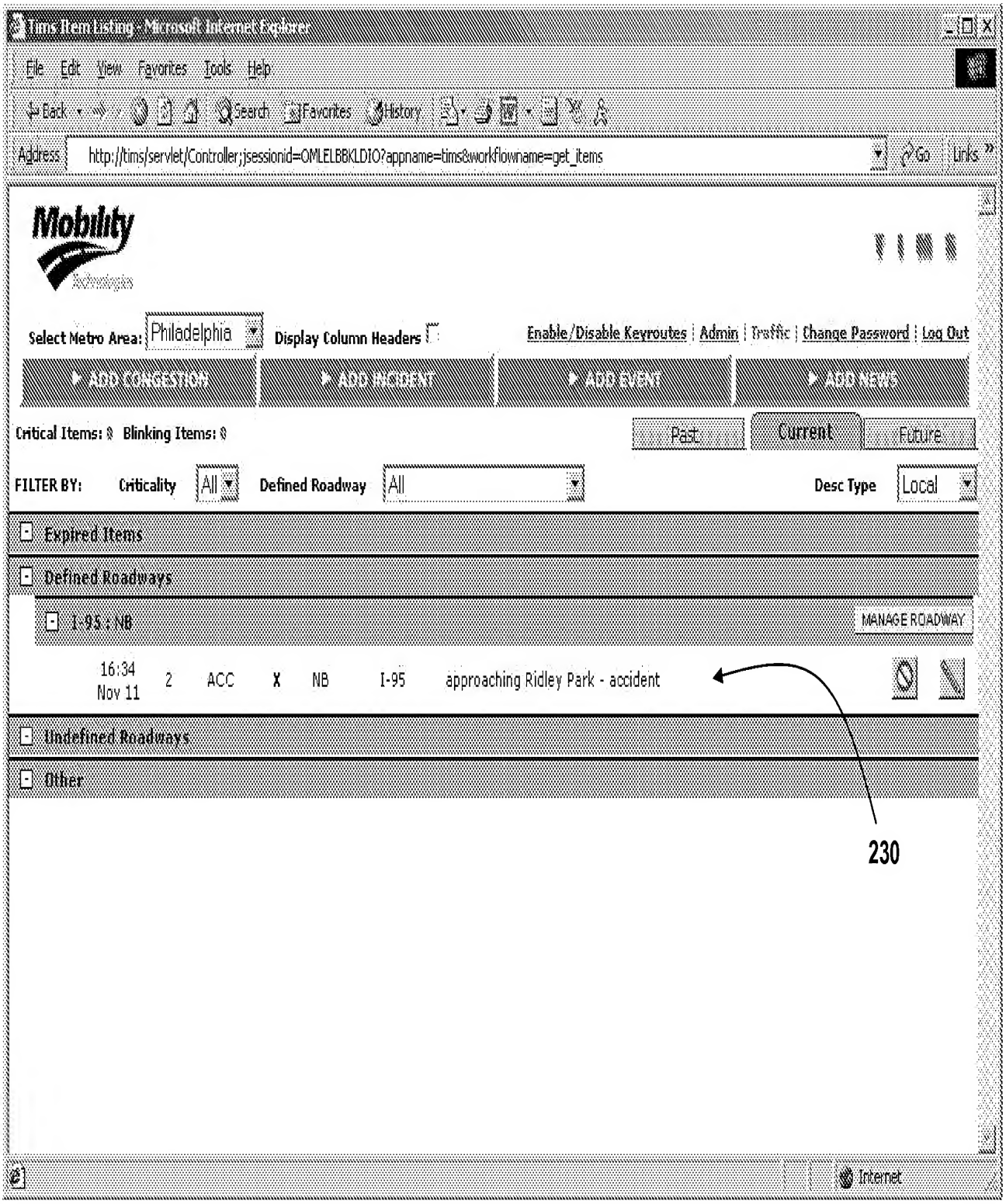

Tims Item Listing - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tims/servlet/Controller;jsessionid=OMLELBBKLDIO?appname=tims&workflowname=get_items
Go Links
Mobility
Select Metro Area: Philadelphia
Display Column Headers
Enable/Disable Keyroutes | Admin | Traffic | Change Password | Log Out
ADD CONGESTION
ADD INCIDENT
ADD EVENT
ADD NEWS
Critical Items: 0 Blinking Items: 0
Past
Current
Future
FILTER BY:
Criticality
All
Defined Roadway
All
Desc Type
Local
Expired Items
Defined Roadways
I-95 : NB
MANAGE ROADWAY
16:34 Nov 11
2
ACC
X
NB
I-95
approaching Ridley Park - accident
Undefined Roadways
Other
Internet
230
222

FIG. 59

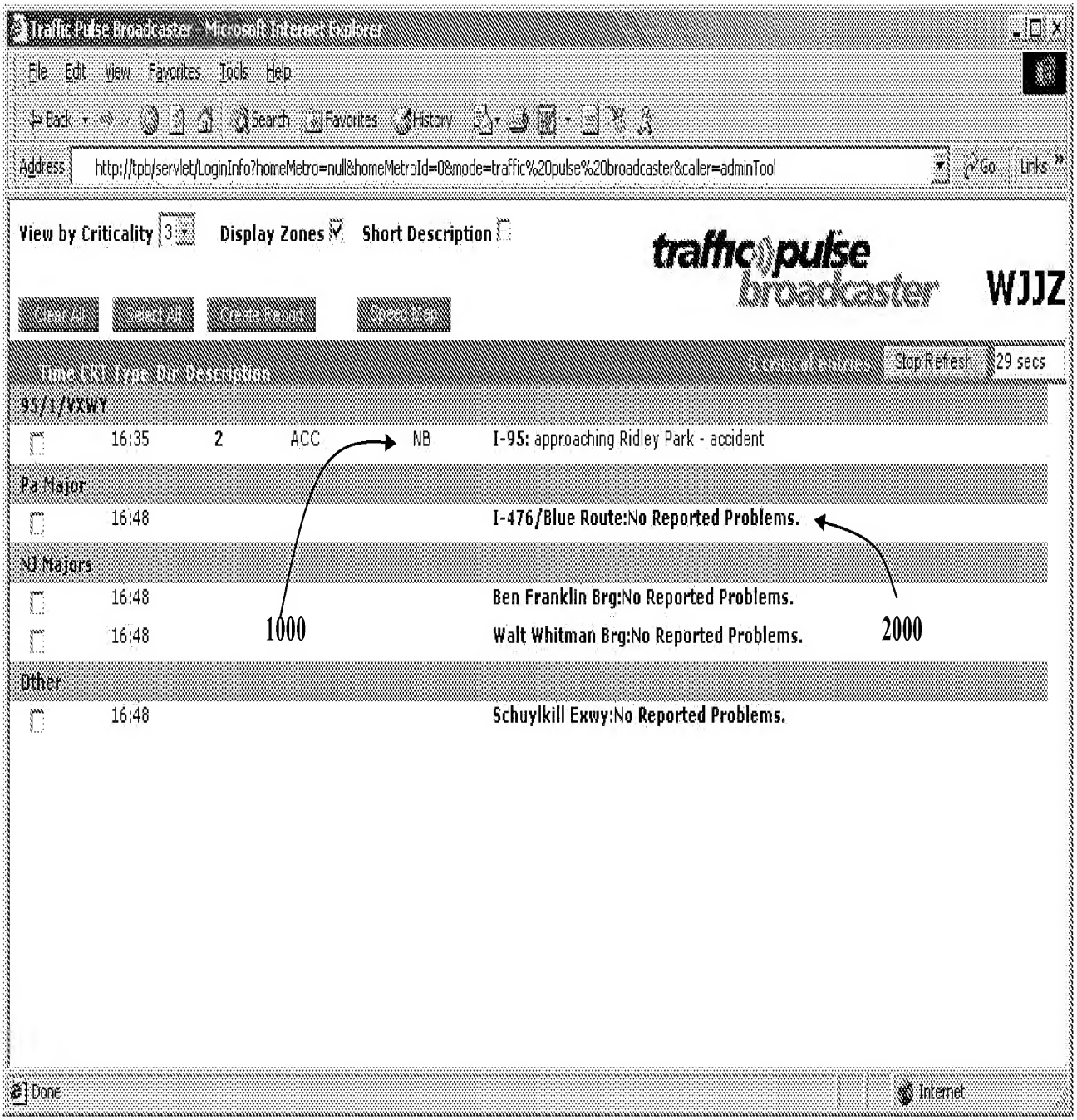

File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tpb/servlet/LoginInfo?homeMetro=null&homeMetroId=0&mode=traffic%20pulse%20broadcaster&caller=adminTool
Go Links
View by Criticality 3
Display Zones
Short Description
traffic pulse broadcaster
WJJZ
Stop Refresh 29 secs
Time EXT Type Dir Description
95/1/VXWY
16:35 2 ACC NB I-95: approaching Ridley Park - accident
Pa Major
16:48 I-476/Blue Route:No Reported Problems.
NJ Majors
16:48 Ben Franklin Brg:No Reported Problems.
16:48 Walt Whitman Brg:No Reported Problems.
Other
16:48 Schuylkill Exwy:No Reported Problems.
1000
2000
Done
Internet
360

FIG. 60

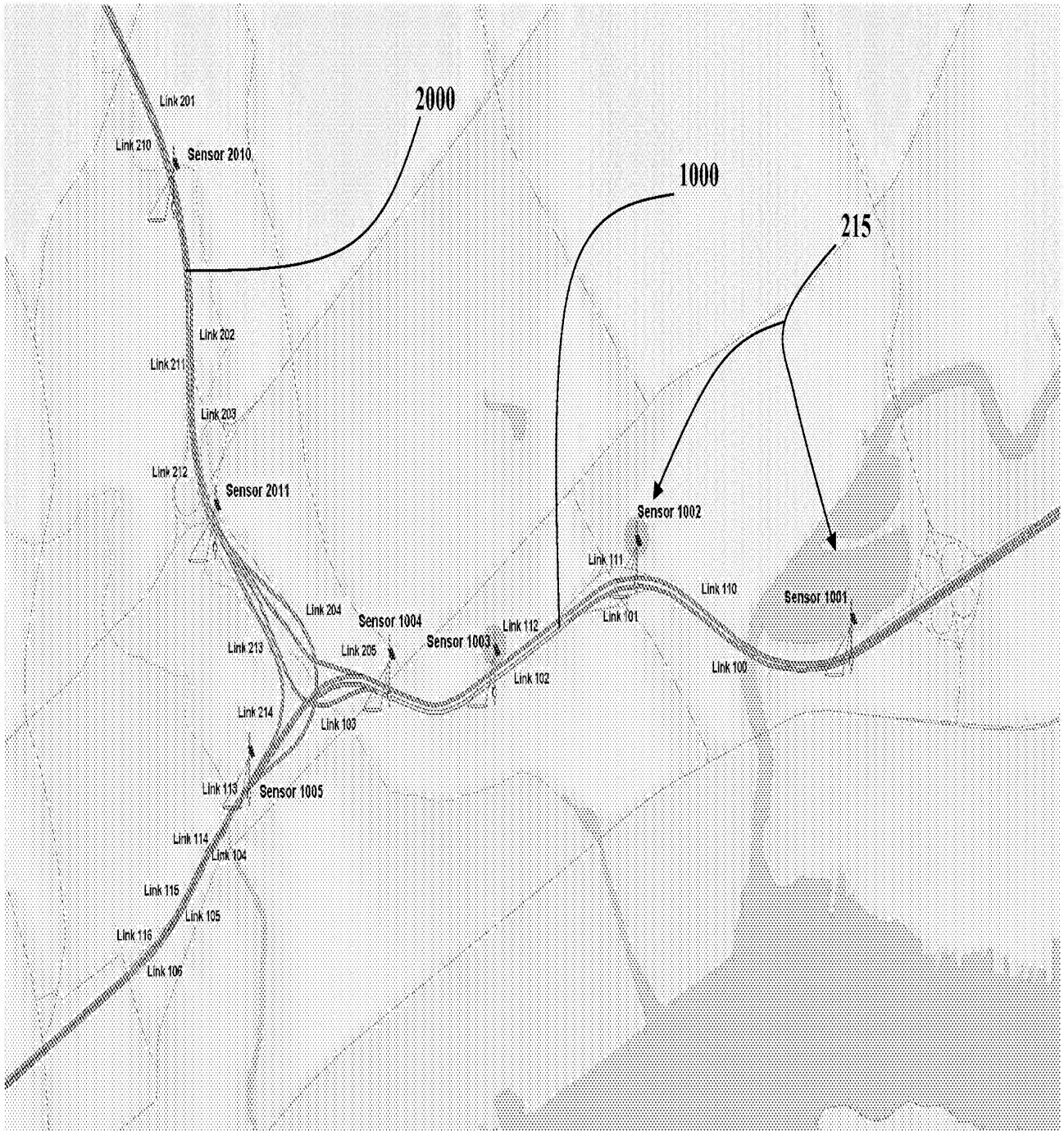

2000
1000
215
Link 201
Link 210
Sensor 2010
Link 202
Link 211
Link 203
Link 212
Sensor 2011
Sensor 1002
Link 111
Link 110
Sensor 1001
Link 101
Link 204
Sensor 1004
Link 112
Sensor 1003
Link 213
Link 205
Link 102
Link 100
Link 214
Link 103
Link 113
Sensor 1005
Link 114
Link 104
Link 115
Link 105
Link 116
Link 106

FIG. 61

TIME = $T_2$

| Roadway 1000 | Sensor 1001 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 65 | 35 | 4 | 8 | |
| 2 | NorthBound | 68 | 30 | 3 | 6 | |
| 3 | NorthBound | 65 | 32 | 5 | 7 | 66 |
| 4 | SouthBound | 48 | 32 | 6 | 14 | |
| 5 | SouthBound | 53 | 35 | 8 | 9 | |
| 6 | SouthBound | 55 | 29 | 5 | 10 | 52 |

| Roadway 1000 | Sensor 1002 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 64 | 25 | 3 | 7 | |
| 2 | NorthBound | 70 | 22 | 2 | 6 | |
| 3 | NorthBound | 68 | 19 | 3 | 4 | 67 |
| 4 | SouthBound | *20* | 40 | 6 | 30 | |
| 5 | SouthBound | *24* | 38 | 5 | 27 | |
| 6 | SouthBound | *23* | 32 | 4 | 26 | *22* |

| Roadway 1000 | Sensor 1003 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | *4* | *8* | 1 | 48 | |
| 2 | NorthBound | *6* | *11* | 1 | 40 | |
| 3 | NorthBound | *7* | *10* | 2 | 37 | *6* |
| 4 | SouthBound | 65 | 18 | 4 | 8 | |
| 5 | SouthBound | 71 | 30 | 5 | 5 | |
| 6 | SouthBound | 68 | 29 | 4 | 5 | 68 |

| Roadway 1000 | Sensor 1004 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | *10* | *20* | 4 | 40 | |
| 2 | NorthBound | *14* | *24* | 6 | 37 | |
| 3 | NorthBound | *12* | *18* | 4 | 42 | *12* |
| 4 | SouthBound | 63 | 27 | 4 | 7 | |
| 5 | SouthBound | 68 | 30 | 3 | 8 | |
| 6 | SouthBound | 64 | 26 | 7 | 6 | 65 |

| Roadway 1000 | Sensor 1005 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 37 | 30 | 2 | 22 | |
| 2 | NorthBound | 32 | 34 | 3 | 24 | |
| 3 | NorthBound | 40 | 32 | 1 | 16 | 36 |
| 4 | SouthBound | 62 | 25 | 7 | 9 | |
| 5 | SouthBound | 58 | 31 | 8 | 8 | |
| 6 | SouthBound | 59 | 32 | 4 | 10 | 60 |

**FIG. 62**

TIME = $T_2$

| Roadway 2000 | Sensor 2010 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 51 | 35 | 6 | 16 | |
| 2 | NorthBound | 53 | 41 | 4 | 13 | |
| 3 | NorthBound | 54 | 38 | 4 | 18 | 53 |
| 4 | SouthBound | 45 | 22 | 2 | 5 | |
| 5 | SouthBound | 49 | 30 | 1 | 4 | |
| 6 | SouthBound | 53 | 28 | 1 | 5 | 49 |

| Roadway 2000 | Sensor 2011 | | | | | |
|---|---|---|---|---|---|---|
| Lane | Direction | Speed | Volume | Long Volume | Density | Smoothed Speed (per Dir) |
| 1 | NorthBound | 56 | 35 | 3 | 17 | |
| 2 | NorthBound | 52 | 34 | 6 | 15 | |
| 3 | NorthBound | 55 | 39 | 3 | 13 | 54 |
| 4 | SouthBound | 16 | 24 | 0 | 35 | |
| 5 | SouthBound | 12 | 18 | 2 | 39 | |
| 6 | SouthBound | 34 | 35 | 2 | 27 | 21 |

FIG. 63

TIME = $T_2$

| Link | Avg Speed (MPH) | Length | Travel Time (min) | Comments |
|---|---|---|---|---|
| 100 | 55.0 | 0.7 | 0.7636 | |
| 101 | 55.0 | 0.34 | 0.3709 | |
| 102 | 8.8 | 0.73 | 4.9585 | assumed equal weighting to each sensor |
| 103 | 24.2 | 0.51 | 1.2662 | |
| 104 | 36.3 | 0.24 | 0.3963 | 6.852220398 |
| 105 | 36.3 | 0.14 | 0.2312 | |
| 110 | 52.0 | 0.8 | 0.9231 | |
| 111 | 22.3 | 0.34 | 0.9134 | |
| 112 | 55.0 | 0.73 | 0.7964 | |
| 113 | 55.0 | 0.47 | 0.5127 | |
| 114 | 55.0 | 0.25 | 0.2727 | |
| 115 | 55.0 | 0.16 | 0.1745 | |
| 201 | 52.7 | 2.19 | 2.4949 | |
| 202 | 53.3 | 0.08 | 0.0901 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 203 | 54.3 | 0.42 | 0.4638 | assume negligible effect from sensor 2010 |
| 204 | 55.0 | 0.81 | 0.8836 | |
| 205 | 53.5 | 0.59 | 0.6617 | |
| 210 | 49.0 | 2.27 | 2.7796 | |
| 211 | 38.7 | 0.08 | 0.1240 | 0.416 miles to sensor 2011<br>0.237 miles to sensor 2010 |
| 212 | 20.7 | 0.34 | 0.9871 | assume negligible effect from sensor 2010 |
| 213 | 16.0 | 0.73 | 2.7375 | |
| 214 | 23.0 | 0.65 | 1.6957 | |

**Congestion Item Calculations**

| Past 320 to Ridley Park | | |
|---|---|---|
| Travel time (min) | 6.85 | 7 |
| Delay (min) | 5.08 | 5 |
| Avg Speed (MPH) | 14.19 | 14 |

| 420 to Ridley Park (SB) | | |
|---|---|---|
| Travel time (min) | 1.84 | 2 |
| Delay (min) | 0.59 | 1 |
| Avg Speed (MPH) | 37.24 | 37 |

| MacDade to I-95 | | |
|---|---|---|
| Travel time (min) | 3.72 | 4 |
| Delay (min) | 2.56 | 3 |
| Avg Speed (MPH) | 17.24 | 17 |

FIG. 64

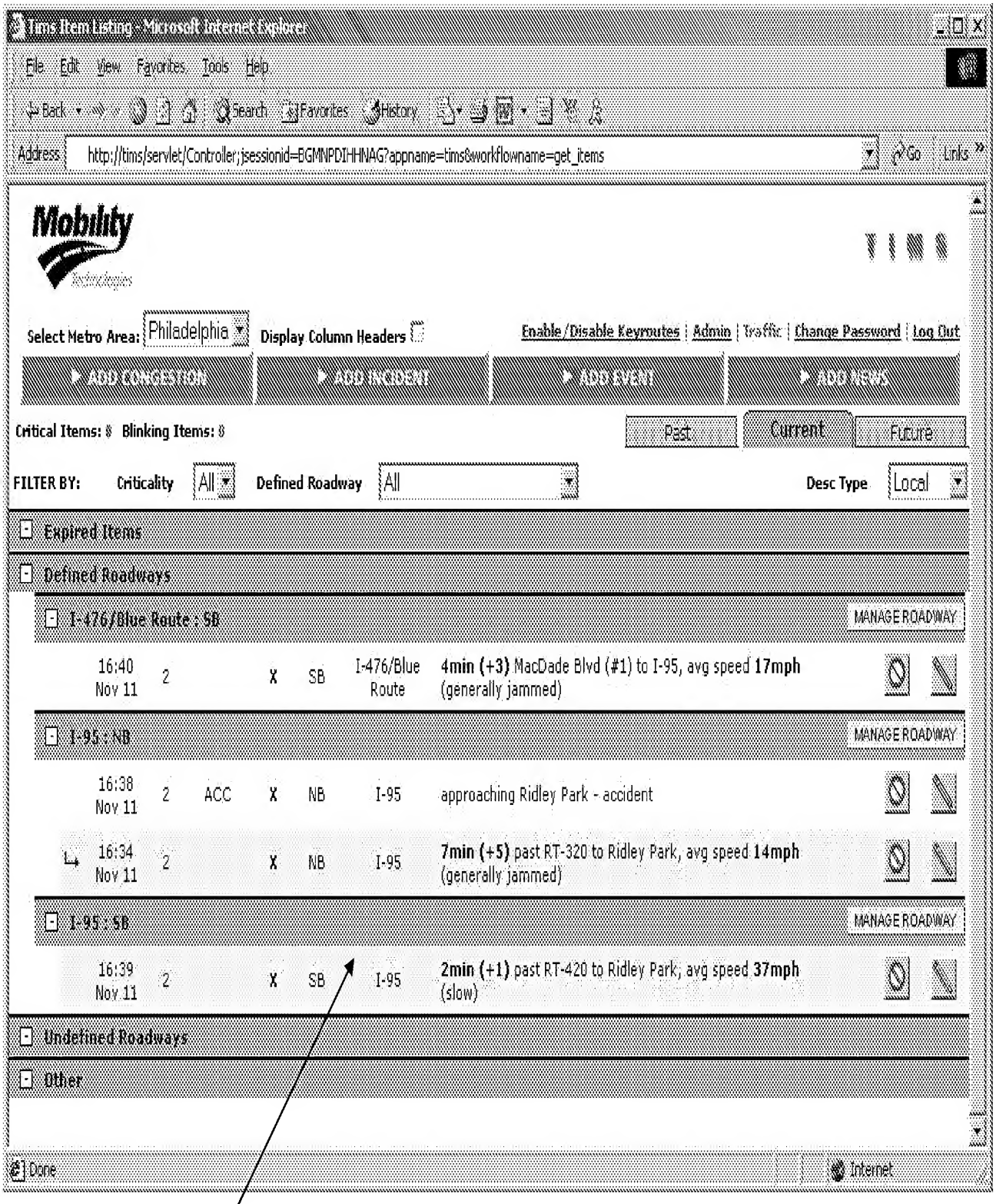

TIMS Item Listing - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://tims/servlet/Controller;jsessionid=BGMNPDIHHNAG?appname=tims&workflowname=get_items
Go Links
Mobility Technologies
TIMS
Select Metro Area: Philadelphia
Display Column Headers
Enable/Disable Keyroutes | Admin | Traffic | Change Password | Log Out
ADD CONGESTION
ADD INCIDENT
ADD EVENT
ADD NEWS
Critical Items: 0 Blinking Items: 0
Past Current Future
FILTER BY: Criticality All Defined Roadway All Desc Type Local
Expired Items
Defined Roadways
I-476/Blue Route : SB
MANAGE ROADWAY
16:40 Nov 11 2 X SB I-476/Blue Route 4min (+3) MacDade Blvd (#1) to I-95, avg speed 17mph (generally jammed)
I-95 : NB
MANAGE ROADWAY
16:38 Nov 11 2 ACC X NB I-95 approaching Ridley Park - accident
16:34 Nov 11 2 X NB I-95 7min (+5) past RT-320 to Ridley Park, avg speed 14mph (generally jammed)
I-95 : SB
MANAGE ROADWAY
16:39 Nov 11 2 X SB I-95 2min (+1) past RT-420 to Ridley Park, avg speed 37mph (slow)
Undefined Roadways
Other
Done
Internet
230
222

FIG. 65

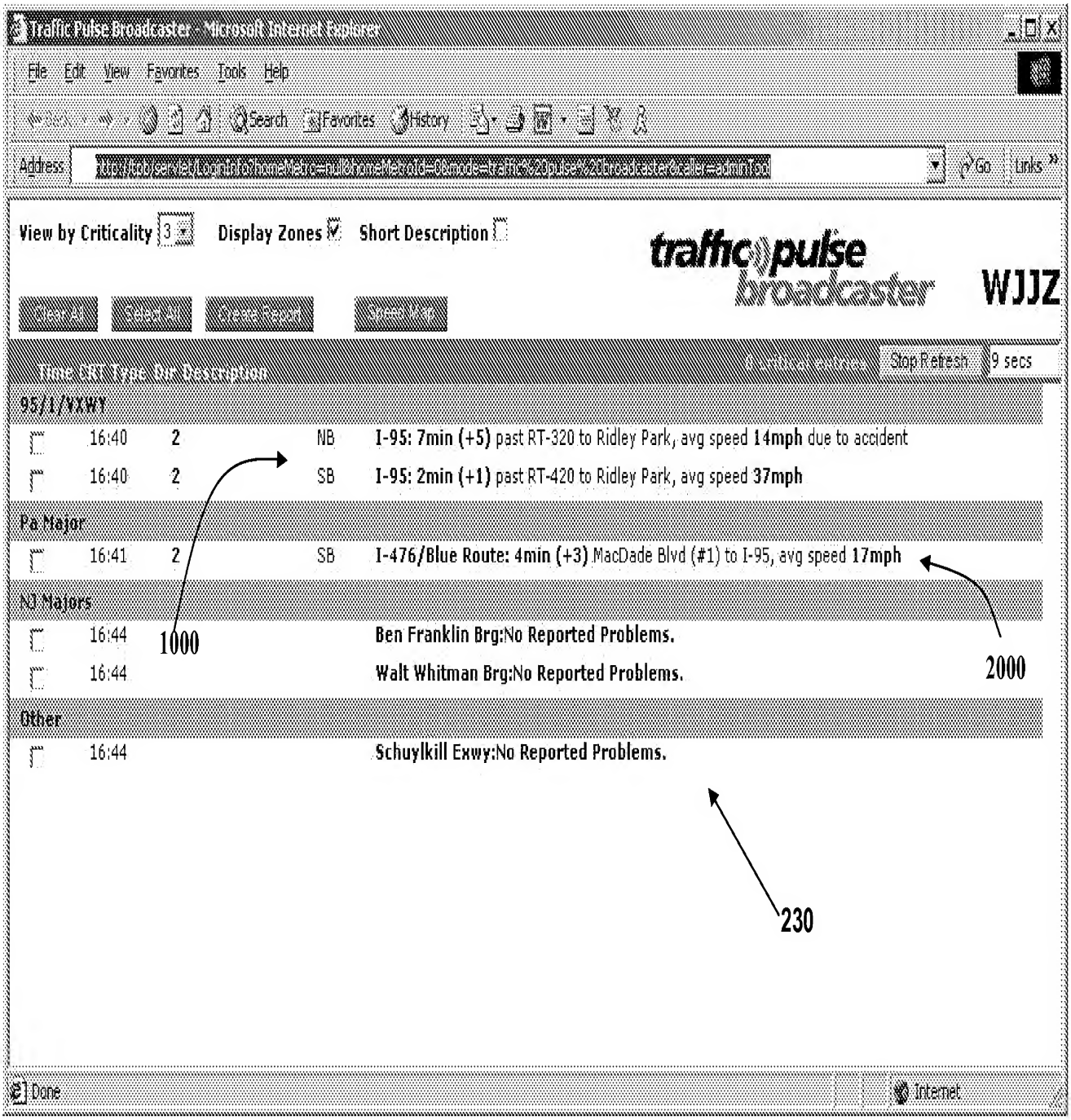

Traffic Pulse Broadcaster - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Search Favorites History
Address
Go Links
View by Criticality 3
Display Zones
Short Description
traffic pulse broadcaster
WJJZ
Stop Refresh
9 secs
Time CRT Type Dir Description
95/1/WXW1
16:40 2 NB I-95: 7min (+5) past RT-320 to Ridley Park, avg speed 14mph due to accident
16:40 2 SB I-95: 2min (+1) past RT-420 to Ridley Park, avg speed 37mph
Pa Major
16:41 2 SB I-476/Blue Route: 4min (+3) MacDade Blvd (#1) to I-95, avg speed 17mph
NJ Majors
16:44 Ben Franklin Brg:No Reported Problems.
16:44 Walt Whitman Brg:No Reported Problems.
Other
16:44 Schuylkill Exwy:No Reported Problems.
1000
2000
230
360
Done
Internet

FIG. 66

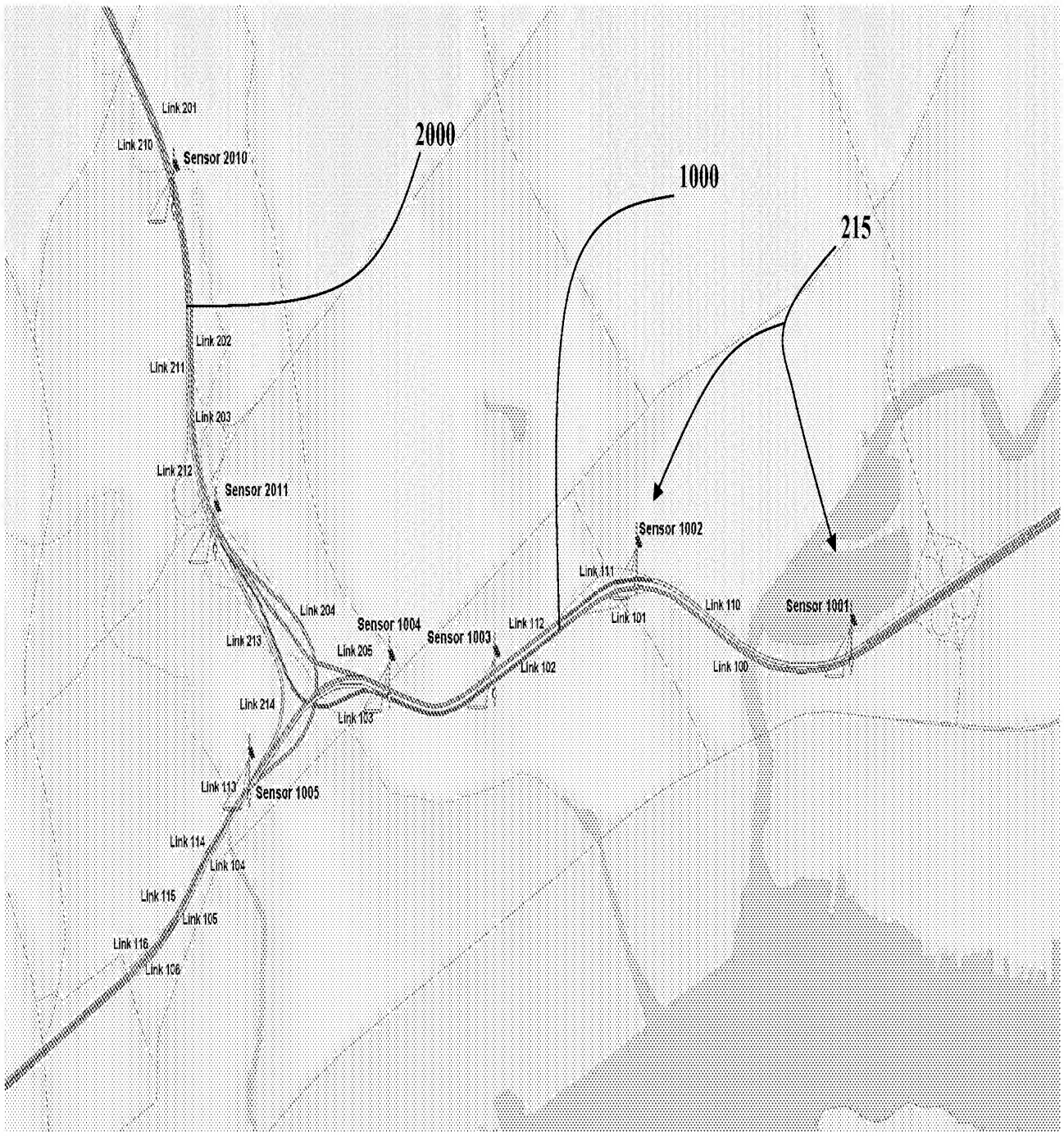

Link 201
Link 210
Sensor 2010
2000
1000
215
Link 202
Link 211
Link 203
Link 212
Sensor 2011
Sensor 1002
Link 111
Link 204
Sensor 1004
Sensor 1003
Link 112
Link 110
Sensor 1001
Link 213
Link 205
Link 101
Link 102
Link 100
Link 214
Link 103
Link 113
Sensor 1005
Link 114
Link 104
Link 115
Link 105
Link 116
Link 106

FIG. 67